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MEDICAL AND SURGICAL MEMOIRS:

CONTAINING

INVESTIGATIONS ON THE GEOGRAPHICAL DISTRIBUTION, CAUSES, NATURE, RELATIONS AND TREATMENT

— OF —

VARIOUS DISEASES,

1855---1890.

BY JOSEPH JONES, M. D.,

Professor of Chemistry and Clinical Medicine, Medical Department Tulane University of Louisiana; Visiting Physician of Charity Hospital; Honorory Fellow of the Medical Society of Virginia; Formerly Surgeon in the Provisional Army of the Confederate States; President of the Board of Health of the State of Louisiana, 1880, 1881, 1882, 1883, 1884; President of the Medical Society of Louisiana, 1888; President of Section XV. (Public and International Hygiene) Ninth International Medical Congress, Washington, D. C., U. S. A., 1887; etc., etc.

VOLUME III.—In Two Parts.

PART I.

Endemic, Epidemic, Contagious, and Infectious Diseases; Measures for their Prevention, and Arrest; Malarial Fever, Yellow Fever, Typhoid Fever, Asiatic Cholera, Small Pox, Varioloid, Varicella, Cow Pox, Vaccination, Spurious Vaccination, Measles, Scarlatina, Diptheria, Phthisis Pulmonalis, Syphilis, Alcoholism. Theory and Practice of Quarantine, Relation of Drainage, Soil, Food, Water and Climate to Endemic, Epidemic, Contagious, and Infectious Diseases. Application of Measures for the Exclusion and Arrest of Yellow Fever and Small Pox in the Mississippi Valley, Illustrated by the Quarantine and Sanitary Operations of the Board of Health of the State of Louisiana during 1880, 1881, 1882, and 1883.

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PART II.

Monographs illustrating the following subjects: Philosophical Principles of Education and their Scientific Application to the Development and Perfection of the Medical Profession, Vital Capacity of the Human Lungs in Health and Disease, Contribution to Teratology, General Medicine, Diseases of the Nervous System, Congenital and Acquired Insanity, Advancement in the Treatment of the Insane during the Nineteenth Century, Treatment of the Insane in Louisiana, Medical History of the Insane Asylum of the State of Louisiana, 1848–1889. The Relation of Quarantine to Commerce in the Valley of the Mississippi River, The Use of Antipyretic Remedies in Febrile Diseases, Public and International Hygiene, Progress of the Discovery of Disinfectants and their Application for the Arrest of Contagion, A History of Maritime Hygiene as applied by the Great Naval Powers

Illustrated by eight Chromo-Lithographic Plates; twenty-one Maps and Charts; twenty-two Extensive and Elaborate Tables, and seventeen Engravings.

Vince Malum Bono.

NEW ORLEANS, LA.:
JOSEPH JONES, M. D., 156 WASHINGTON AVENUE, COR. CAMP ST., 4TH DISTRICT.
1890.

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PREFACE.

The term Memoir is used in its comprehensive sense, embracing not merely an account of transactions and events in which the author enacted a prominent part, but also monographs and exhaustive discussions and investigations of important subjects relating to the Science of Medicine.

The term Medical is used in its widest acceptation, as embracing the discussion of subjects relating to the causes, nature, treatment and prevention of various diseases, including domestic sanitation and public and international hygiene.

In this the THIRD VOLUME OF THE MEDICAL AND SURGICAL MEMOIRS subjects of importance to the welfare and advancement of the human race are discussed, in the order in which they have engaged the attention and engrossed the physical and intellectual energies of the author in the discharge of his official duties, and in the prosecution of his original investigation on the natural history and treatment of diseases, and their relations to soil, waters and climate.

While the experience and labors of thirty-five years of active and unremitting medical service has been freely used in conducting various medical and sanitary operations and investigations, recorded in this volume, it must, however, be noted that the period especially under observation embraces the last decade, 1880-89, inclusive.

The first four years (1880, 1881, 1882 and 1883) of these ten years must be regarded as most important in the history of public hygiene, in the North American republic, in the light of the magnitude of the issues involved and the importance of the results accomplished.

When in 1880, the Presidency of the Board of Health of the State of Louisiana was imposed upon the author, through the action of His Excellency, Louis Alfred Wiltz, Governor of the State of Louisiana, the quarantine appliances were in a dilapidated condition, and the quarantine system in a deplorable state. Sanitary regulations were daily disregarded by the citizens, and the quarantine laws of the State were openly violated by rich and powerful steamship and railroad corporations. The sanitary and quarantine authorities of Louisiana were regarded by many with suspicion, dread and hatred, and New Orleans was looked upon as a *plague spot* and *constant* menace to the health and prosperity of the inhabitants of the great valley of the Mississippi.

The diverse opinions of medical men as to the imported or indigenous nature of yellow fever, the pronounced hostility of many of the citizens to measures of quarantine, and the ravages of yellow fever in former years, and more specialy in 1878, when it invaded New Orleans, availed itself of all the modern facilities of transportation and spreading itself broadcast over a wide area of the Mississippi valley, carrying death and terror: these were the potent causes which destroyed the confidence of the citizens of neighboring States in the wisdom of the medical profession and in the honesty of purpose of the merchants of New Orleans, and laid the ground work for sensational rumors, panics and unreasoning and brutal shot-gun quarantines.

It was deemed of importance that all facts relating to the HISTORY, THEORY AND PRACTICE OF QUARANTINE, AND TO THE MEASURES INSTITUTED FOR THE ARREST AND EXCLUSION OF CONTAGIOUS DISEASES AND ESPECIALLY YELLOW FEVER from the valley of the Mississippi, should be fully set forth for the information and guidance of the medical profession

The Board of Health organized in accordance with the provisions of the Constitution of 1879, by the late Louis Alfred Wiltz, Governor of Louisiana, commenced its labors with scant resources, and with the quarantine establishment in a dilapidated condition.

By rigid economy, and by the wise counsels of the patriotic members of the Board of Health, the quarantine stations were repaired and equipped, the approaches to the southern and eastern shores of Louisiana were strengthened by additional guards, every obligation was promptly met by cash payments, and the President and Finance Committee retired at the expiration of their terms of service, April, 1884, leaving a surplus of near ten thousand dollars in bank to the credit of the Board.

During the four years 1880-1883, 4436 vessels (more than one-half or 2457 of which were large ocean steamships), exceeding 8,000,000 tons, were inspected by the officers of the Board of Health at the Mississippi quarantine station, together with their crews and passengers, which numbered over 100,000 During the same period 479 vessels from ports infected with yellow fever were held in the Mississippi quarantine, disinfected and fumigated. At the Atchafalaya station, 1064 vessels, about one-half of which were ocean-going steamships, with about 20,000 souls, crew and passengers, were inspected; and at the Rigoletes quarantine station, about 4338 vessels, chiefly schooners, with about 24,000 seamen and passengers, were inspected during the years 1880, 1881, 1882 and 1883.

During the period specified, therefore, the Board of Health of the State of Louisiana, through its faithful, experienced and energetic officers, inspected about 10,000 vessels, which carried not less than 150,000 seamen and passengers.

Notwithstanding the prevalence of yellow fever in Vera Cruz, Havana, and Rio de Janeiro during this period, and notwithstanding the prevalence of yellow fever at Brownsville, Texas, and at Pensacola, Florida, in 1882, and at the Naval Reservation, Florida, and at Brewerton, Alabama, in 1883, and notwithstanding the presence of yellow fever at the Mississippi Quarantine Station in 1880 and in 1882, New Orleans and the Mississippi Valley were free from this terrible scourge.

The reader will find in the present volume a detailed statement of the relations of climate to endemic and epidemic diseases and especially of heat and moisture to the origin and dissemination and progress of yellow fever, together with a full and accurate record of the sanitary measures instituted for the arrest of contagious and infectious diseases.

The labors of the author in Louisiana during the years 1880, 1881, 1882 and 1883, have established the following conclusions:

1. *Yellow fever is not indigenous to New Orleans.*
2. *Yellow fever is not indigenous to Louisiana.*
3. *Yellow fever is not indigenous to the Mississippi Valley.*
4. *Yellow fever can be excluded from New Orleans and the Mississippi Valley by a rigid and effective quarantine.*
5. *Quarantine to be effective, must embrace not merely inspection and detention, but discharge of infected cargoes, thorough ventilation and fumigation and disinfection by the recognized methods of Sanitary Science.*
6. *The citizens of Louisiana should demand that the members of the Board of Health appointed by the Governor and Common Council of New*

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Orleans should be men competent to devise and execute the measures necessary to the exclusion of foreign pestilence from the waters of Louisiana.

After a continuous battle, of four years duration, in which the vast maritime interests of the State, and the power and influence of the wealthiest railroad and steamship company in the Southwestern States were marshalled against the legally constituted health authorities, the Board of Health of the State of Louisiana achieved a memorable and signal victory on the twenty-first of January, 1884, in the complete and triumphant vindication of its efforts to exclude foreign pestilence from the Mississippi Valley, by the highest legal tribunal of the State of Louisiana. (pp. clxix.)

If the decision of the Supreme Court had been adverse to the Board of Health, the quarantine laws of Louisiana would have been rendered powerless for the exclusion of foreign pestilence. Quarantine must be sustained either by an appropriation from the State government, or from the inspection fees; the General Assembly of Louisiana had made no appropriation for the maintenance of quarantine; therefore if the decision of the Lower Court had been sustained by the Supreme Court of Louisiana, an extra session of the Legislature would have been necessary for the appropriation for the support of the officers and employees, the supply of disinfectants, the maintenance of the hospitals, and the isolation and treatment of seamen and passengers, suffering with contagious and infectious diseases. The actual expenses of an extra session of the Legislature of Louisiana would have imposed an additional burden upon the taxpayers of the State which would have exceeded the amount now collected for the support of quarantine at least four times; in other words, the expenses of the extra session would have been sufficient to maintain the quarantine system, during a period of four years and longer.

The records of the Board of Health show that the Morgan's Louisiana and Texas Railroad Company was indebted to the State of Louisiana, for quarantine fees, about $14,385; and the Cromwell Steamship Line $8400; total amount due to the State of Louisiana by the Morgan and Cromwell lines, about $22,785.

The decision of the Supreme Court of Louisiana, in case No. 8755, not merely relieved the citizens from the additional expense of an extra session of the General Assembly, but also affirmed the right of the State to over $22,000 due for unpaid quarantine fees by the Morgan and Cromwell lines.

The decision of the Supreme Court of Louisiana has confirmed the view held and strenuonsly advocated by the President of the Board of Health that:

The fees collected by the State of Louisiana from vessels subjected to the quarantine laws are not in the nature of a tax or impost on commerce, but are a just and necessary compensation for the great service rendered commerce in the cleansing and disinfection of the vessels and cargoes, in the care and treatment of the sick, by the medical officers of the State, and by the exclusion of foreign pestilence, and the establishment of public confidence and the maintenance of commerce, which, but for said quarantine service, would be greatly damaged.

Were it not for the execution of the quarantine laws by the Board of Health of the State of Louisiana, the port of New Orleans would be hermetically sealed to commerce during from four to six months every year, and all intercourse with the surrounding States would be closed by the *shotgun quarantines controlling the river and railroads.*

The decision of the Supreme Court of Louisiana is of interest and importance to every State and municipal government in the United States of America, for the doctrine is hereby clearly recognized, that:

The establishment and enforcement of quarantine by individual States

is not a regulation of commerce in violation of the provisions of the Federal constitution, but is the legitimate exercise of the POLICE POWERS *by the individual States, which are* INALIENABLE.

The Supreme Court of the United States, in the appeal which was taken by Morgan's Louisiana and Texas Railroad and Steamship Company from the decision of the Supreme Court of Louisiana, sustained the decision on the 21st of January, 1886, and thus the views and actions of the author, in his official capacity as President of the Board of Health of Louisiana, are now upheld by the finding of the highest tribunal of the republic.

These judicial decisions, which are of prime importance to all local and State Boards of Health, have been treated in the third volume of the Medical and Surgical Memoirs, Part I, p. clxix; Part II, pp. 299–306.

All facts and measures relating to the prevention of endemic, epidemic, contagious and infectious diseases are of interest and importance to sanitarians, physicians and political economists.

Efforts to exclude and arrest contagious diseases possess peculiar value, when exerted in behalf of the inhabitants of some great commercial metropolis, like New Orleans, whose existence and prosperity are indissolubly bound up with those of the people living upon the banks of her great river, and within the bounds of the fertile plains of its mighty valley.

During the years 1853, 1854 and 1855, New Orleans lost 12,780 of her citizens by yellow fever, an *exotic imported disease;* and in 1878 she lost by *yellow fever* 4056 souls and $15,000,000.

The internal or interstate trade of New Orleans equals annually about $200,000,000, exceeding greatly the value of the foreign imports and exports.

The preservation of this internal interstate trade depends absolutely upon an efficient quarantine guarding the approaches of the Mississippi valley from the Gulf of Mexico.

New Orleans will become a great manufacturing centre for cotton, tobacco, jute and sugar, provided that pestilence is kept away by a rigid system of domestic sanitation.

If yellow fever is allowed to enter, this port will be hermetically sealed; and during the embargo, which may last as long as six months, there will be practically non-intercourse with the surrounding States, and all manufactories will be closed, as there will be no possibility of shipping manufactured articles.

No system of manufactories, however well ordered, can sustain such periods of inactivity.

The exemption of New Orleans and the Mississippi valley from yellow fever during the years 1880, 1881, 1882 and 1883, has been with justice referred to the rigid system of quarantine inspection, detention and sanitation established and executed by the author. With the continuous execution of similar measures, it is reasonable to believe that yellow fever will be permanently banished from Louisiana.

With the definite settlement of the relations of quarantine and commerce by the decisions of the Supreme Courts of Louisiana and of the United States, all the barriers which have hitherto barred the progress of scientific quarantine and maritime sanitation have been removed, and the establishments and regulations of each and every State in the union are protected by the STRONG ARM OF THE LAW.

By mutual agreements and by the adoption of uniform quarantine arrangements, and by a hearty coöperation with the representatives of the national government, it will be practicable for the seaboard States of this republic to form an impregnable cordon against yellow fever and all other foreign pestilences.

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We have presented tabular views of the comparative symptomatological and comparative anatomy and pathology of malarial and yellow fever, based upon the investigation of more than a quarter of a century.

This tabular view is intended as a text book and guide to physicians, who may be brought in contact with yellow fever. See volume III, part I, pages 43-87.

The prevalence of small-pox in the States tributary to the Mississippi river, and the constant danger to which Louisiana is exposed from her geographical position, and from the peculiar *race conditions* of the lower sections of the Mississippi valley, as well as the neglect of vaccination by large masses of the population, and the growth of a sentiment opposed to vaccination, on the part of the profession and people, rendered it necessary that a special work should be issued on *small-pox (variola)*, *modified small-pox (varioloid)*, *chicken-pox (varicella)*, *cow-pox (variolæ vaccinæ)*, *vaccination and spurious vaccination* for the guidance of Quarantine Officers and Sanitary Inspectors and for the information of the legal and medical profession of the United States.

No more important subject can engage the attention of the medical profession and sanitary authorities, and the representatives of the State, Municipal and parish governments, than the prevention of small-pox. Vaccination and all that relates to vaccination is of paramount importance to the welfare of the inhabitants of this republic.

In the first part of this volume of the Medical and Surgical Memoirs the author has reproduced the following works:

"*An inquiry into the causes and effects of the variolæ vaccinæ, a disease discovered in some of the Western counties of England, particularly Gloucestershire, and known by the name of the cow-pox.* By Edward Jenner, M. D. and F. R. S., etc. Third edition, London, 1801.

We have selected the third edition of the works of Edward Jenner, published in London in 1801, because we find upon careful comparison of the three editions, published respectively in 1798, 1800 and 1801, that the latter appears to have received most careful revision by Dr. Jenner.

I have selected the plates from the first edition, published in 1798, because the impressions are better defined and colored with more care than those of the second and third editions.

The identical plates appear to have been used in the printing of the two editions.

"*Further observations on the Variolæ Vaccinæ.*" By Edward Jenner, M. D. and F. R. S.

"*A continuation of facts and observations relative to the variolæ vaccinæ of Cow-Pox.*" By Edward Jenner, M. D. and F. R. S., etc. London, 1801.

"*An inquiry into the history of the Cow-Pox, principally with a view to supersede and extinguish the Small-Pox.*" By George Pearson, M. D. and F. R. S.

"*Reports of a series of inoculations for the variolæ vaccinæ or Cow-Pox with remarks and observations on this disease considered as a substitute for the Small-Pox.*" By William Woodville, M. D.

The publication of these works is followed by the author's original remarks on the following subjects:

The nature and causes of the Epidemics of Small-Pox which have followed the introduction of vaccination by Dr. Edward Jenner.

In the comparative advantages of the Inoculated Small-Pox and of the Cow-Pox.

History of Small-Pox Inoculation.

Mortuary Statistics of Small-Pox in various Countries.
History of Cow-Pox Inoculation in Europe and America.
History and Statistics of Vaccination in Europe and America.
The relation of grease in the horse's heels to Cow-Pox.
Character and Cause of Horse-Pox.
General Description of Cow-Pox illustrated by chromo-lithographic comparative views of the Natural Small-Pox, inoculated Small-Pox and Cow-Pox.
Comparative Phenomena of Small-Pox, Inoculated Cow-Pox, Cow-Pox, and Modified Small-Pox, or Varioloid: illustrated by chromo-lithographs.
Spurious Vaccination or the Abnormal Phenomena accompanying and following Vaccination.
Causes of the various deviations of the Vaccine Disease from the Normal Course—introduction of other diseases into the organism by vaccination; Vaccine Syphilitic inoculation; Accidents attending vaccination in the army of the Confederate States during the Civil War, 1861-1865: illustrated by chromo-lithographs.

The portion of this work devoted to the consideration of Small-Pox, Cow-Pox, Chicken-Pox, and Spurious Vaccination, extends from page 135 to page 542 inclusive of the First Part, and embraces absolutely all the investigations and observations of the author relating to these important subjects during the past thirty years.

The Second Part of this Volume contains a series of monographs relating chiefly to:

Medical Education.
Teratology.
Nervous Diseases.
Insanity.
Public and International Hygiene.
Progress of the Discovery of Disinfectants and their Application to the arrest of Contagion.
A History of Maritime Hygiene as applied by the Great Naval Powers.

This portion of the work occupies 551 closely printed pages, and constitutes the labors of the author in 1886 and 1887, as President of the Fifteenth Section, Public and International Hygiene of the Ninth International Medical Congress, and as Vice-President, President and Chairman of the Committee on General Medicine of the Louisiana State Medical Society, during the years 1887, 1888 and 1889.

The researches of the author on the history of insanity and its causes, and on the condition and treatment of the insane in Louisiana, completes his medical and sanitary labors in behalf of his fellow citizens, conducted continuously during the past decade, 1880 to 1889.

These researches in insanity have been conducted upon the broadest principles of humanity, and have for their sole object the alleviation of the condition of the insane. In this monograph upon insanity as well as in the succeeding one on the Relations of Quarantine to Commerce in the Mississippi Valley, the legislatures of the State and National Governments will find important material for their careful consideration and official action.

Some estimate of the extent of the labors now recorded for the use of the medical profession, may be formed from the facts that this third volume of the Medical and Surgical Memoirs embraces over 1540 closely printed pages, and is illustrated by 8 chromo-lithograph plates, 21 maps and charts, 22 large and elaborate tables, and 17 engravings.

The chromo-lithographs relate chiefly to cow-pox, small-pox, and arm vaccination, varioloid, spurious vaccination and hospital gangrene.

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The maps, charts and plans illustrate the topography and settlement of the delta of the Mississippi Valley, and the progressive development of New Orleans. The great problem of effective drainage can best be elucidated by presenting a series of plans and charts. The medical topography of Louisiana can be comprehensively studied by the aid of the maps, colored according to the geological and botanical characters of the different natural divisions of the State. The position and relations of the quarantine system of Louisiana, as well as the remarkable formation of the coast of this State, will be fully illustrated by the maps executed for the author by the late distinguished engineer, Col. T. S. Hardee.

In the construction of the extensive and elaborate tables, the author has spent his time, labor and money to secure a tabular form of the vital, mortuary, commercial and climatic statistics of Louisiana and of New Orleans, and he feels assured that the great mass of facts thus tabulated will prove of lasting value to the students of medicine, hygiene, agriculture, commerce, climatology and political economy in this and other countries.

JOSEPH JONES, M. D.,

156 Washington Street, Fourth District, New Orleans, La., Jan. 1890.



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CATALOGUE OF CHROMO-LITHOGRAPHS, TABLES MAPS, CHARTS, PLANS AND ENGRAVINGS.

CHROMO-LITHOGRAPHS ILLUSTRATING VOLUME III—MEDICAL AND SURGICAL MEMOIRS OF JOSEPH JONES, M. D.

PLATE NO. 17.

Figure 76. Hand of Sarah Nelmes, a dairy-maid, infected with the cow-pox, May, 1796.

PLATE NO. 1.

Case XVI. "An inquiry into the causes and effects of the Variolæ Vaccinæ, by Edward Jenner.

PLATE NO. 18.

Figure 77. Arm of John Baker, a child vaccinated March 16, 1798.

PLATE NO. 2.

Case XVIII. Inquiry, etc., Edward Jenner.
Figure 78. Arm of William Pond, Case XX.

PLATE NO. 3.

Inquiry, Edward Jenner.
Figure 79. Arm of Hannah Excell, Case XXI.

PLATE NO. 4.

Inquiry into Variolæ Vaccinæ. Edward Jenner.

PLATE NO. 19.

Figure 80. The casual cow-pox in the teats and udder of a black and white milch cow. After Mr. Ceely of Alesbury.

PLATE NO. 20.

Figure 81. Confluent Small-Pox.
Figure 82. Confluent Small-Pox.
Figures 83, 84 and 85. Small-Pox Pustules.

PLATE NO. 21.

Figures 86-90. Figure 86, Varioloid; Figure 87, Small-Pox eruption; Figure 88, Small-Pox eruption; Figure 89, Varioloid eruption; Figure 90, Varioloid eruption.

PLATE NO. 22.

Figure 91. Arm of federal prisoner. Hospital Gangrene; attacked small abrasion near elbow; amputation; death. Andersonville, Georgia, Sept. 20, 1864. From nature, by Joseph Jones, M. D.

PLATE NO. 23.

Figure 92,. Leg of Thomas Cole, private 3d Regiment Georgia Reserves, guarding federal prisoners at Andersonville, Ga., Sept. 22, 1864. While guarding the stockade Hospital Gangrene attacked abrasions of the skin on the right foot and leg. From nature, by Joseph Jones, M. D.

PLATE NO. 24.

Figure 93. Hand of W. J. Black, Confederate soldier, poisoned by prick of pin whilst dressing. Hospital Gangrene. Represents gangrene spreading rapidly on third finger. October 3, 1864. Drawn from nature, by Joseph Jones, M.D.

The plates 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15, referred to in the Tabular Form entitled General Outline of the Symptoms and Pathological Anatomy of Yellow and Malarial Fevers, pp. 44-85, Part I, Volume iii, Medical and Surgical Memoirs, have already been presented in Volume ii.

The reader is referred to Volume ii, Medical and Surgical Memoirs, for the plates illustrating this elaborate comparison of the Comparative Pathology of Malarial and Yellow Fevers.

Tables illustrating the Vital Nosological, Mortuary, Commercial, Climatic Statistics of the Delta of the Mississippi Valley, and more especially of New Orleans, Louisiana; collected, classified and published by Joseph Jones, M.D., of New Orleans, Louisiana, for the illustration of Volume iii of his Medical and Surgical Memoirs.

Table illustrating the increase of population in the City of New Orleans during a series of 96 years, with the total mortality for each year, and the death rate per 1000 inhabitants per annum; also deaths from Yellow Fever, Maximum and Minimum Temperature and Rainfall. Volume iii, Part I.

TABLE A.--Vital Nosological and Mortuary Statistics of the Charity Hospital of New Orleans, embracing Total Admissions and Discharges and Deaths, also admissions and deaths of the more important and prevalent Diseases, during a period of eighteen years preceding the American Civil War, and a period of seventeen years following the American Civil War, 1842-1867 and 1864-1880. Total period 34 years. Volume iii, Part I.

TABLE B.—Foreign Countries and States of the American Union from which the patients annually admitted into the Charity Hospital of New Orleans, Louisiana, have come, and the number from each during a period of forty-five years, 1830-1880.

TABLE C.--Mortuary Statistcs of New Orleans, Louisiana, during a period of thirty-four years, 1849-1880, Volume iii, Part I.

TABLE D.--Mortuary Records of New Orleans by the month and by the year for four years, 1850, 1860, 1870 and 1880, in which the United States census was taken, and in which yellow fever did not prevail to any extent. Volume iii, Part I.

TABLE E.--Mortuary Records of New Orleans by the month and by the year for four years, 1853, 1858, 1867 and 1878, in which yellow fever prevailed with the greatest severity in the annals of the city. Volume iii, Part I.

TABLE F.--Vital and Mortuary Statistics of New Orleans--Mortality of White and Black Races in New Orleans, Louisiana, during three years, 1849, 1850 and 1853 preceding the Civil War (1861-1865), and during the period of slavery; also illustrating weekly and daily mortality by cholera and yellow fever for 1846, 1847, 1851, 1852, 1853, 1854, 1855, 1857, 1858, 1866, 1867 and 1878; also deaths from zymotic and epidemic diseases (small-pox, measles, scarlatina, typhus fever, typhoid fever, yellow fever, malignant or Asiatic cholera, etc.), with death rate per 1000 inhabitants from epidemic and zymotic diseases. Volume iii, Part I.

TABLE G.—Mortuary Statistics of New Orleans, La., illustrating the mortality by months in the white and black races, during five years, subsequent to American Civil War 1877, 1878, 1879, 1880 and 1881. Volnme iii.

TABLE H.—Meteorological Statistics of New Orleans for the year 1881, giving the daily range of mortality and of the thermometer, barometer and rainfall for the entire year; also deaths reported by the coroner and those which occurred in charitable and public institutions, including the Charity Hospital of New Orleans, during the year 1881. Volume iii. Part II.

TABLE I.—Comparative Meteorological Records of the Years 1850, 1860, 1870 and 1880, in which the United States Census was taken, and in which yellow fever did not prevail to any extent. Volume iii. Part II.

TABLE J.—Comparative Meteorological Records of the Years 1847, 1853, 1858 and 1878, in which Yellow Fever prevailed in the Epidemic Form. Volume iii. Part II.

TABLE K.

1. Exports and Imports of New Orleans, from 1805 to 1882.
2. Exports and Imports of New Orleans during 1882.
3. Value of the Products of the Interior, received at New Orleans, 1841, 1842 to 1881-82.
4. Coffee Trade of New Orleans, 1854 to 1882.
5. Total Sugar Crop of Louisiana; annual values, with total deaths from all causes and from yellow fever, 1828 to 1882.
6. Sugar Crops of 1880-81 and 1881-82; number of sugarhouses in operation.
7. Molasses, crops of, 1877 to 1882.
8. Rice, 1865 to 1882.
9. Bacon, prices, of 1874 to 1880.
10. Lard, monthly receipts 1880-81 and 1881-82; exports.
11. Flour, receipts, sales, export and stock by months, 1881-82; by years, 1874 to 1882.
12. Grain, shipments of, 1881-82.
13. Total number of vessels cleared 1881-82.
14. Grain, total export of, 1880-81.
15. Tobacco, receipts and exports, 1822 to 1882.
16. Cotton, receipts and exports, 1822 to 1882.

17. Southern Staples and Western Produce, value of receipts, 1841 to 1860; (Cotton, Sugar, Molasses, Tobacco, etc.)
18. Cotton, total product, gross receipts at New Orleans, average price, 1870 to 1882; exports, whereto; futures, sales of; 1880-81; receipts at United States ports; sources of receipts at New Orleans; consumption.
19. Cotton, dates of first receipts, 1849 to 1882; number of bales received previous to August 31, 1870 to 1882.
20. Cotton, amount carried by Chicago, St. Louis and New Orleans Railroad, 1876 to 1882.
21. Cotton, exports of and destination, 1826 to 1836; tobacco, exports of and destination, 1826 to 1836.
22. Exports of and destination, 1851 to 1857, tobacco, exports of and destination, 1851 to 1857.
23. Cotton, exports of and destination, 1871 to 1881.
24. Customhouse receipts, 1879-80 and 1880-81.
25. United States Sub-treasury, receipts and disbursements, 1880-81-82.
26. Imports from the Interior, 1847 to 1857.
27. Imports from the Interior, 1828 to 1836.
28. Cotton, exports and destination, 1851 to 1857; Tobacco, exports and destination, 1851 to 1857.
29. Sugar and Molasses, exports of, 1854-57; Flour, Pork, Bacon, Lard, Beef, Whisky and Corn, exports of, 1855 to 1857.
30. Coffee, Sugar and Salt, imports of, 1855 to 1857; Cotton and Tobacco, receipts of, 1847 to 1857.
31. Cotton and Tobacco, receipts and exports of, 1822 to 1857.
32. Specie, imports of, 1845 to 1857.
33. Sugar, exports of, 1834 to 1855; first receipt of new crop.
34. Produce, receipts and estimate value and average price, 1856 to 1857.
35. Produce, value of, 1854 to 1857.
36. Produce, value of, 1847 to 1854.
37. Imports, dutiable, free and bullion and specie, 1855 to 1856.
38. Produce, receipts from the interior, 1853 to 1865.
39. Produce, receipts from the interior, value of and average price, 1859-60, 1863-64, 1864-65.
40. Produce, value of receipts from the interior, 1859-60, 1863-64, 1864-65.
41. Produce, receipts of, 1859-60, 1863-64, 1864-65.
42. Produce, table showing increase and decrease of receipts, 1859-60, 1863-64, 1864-65.
48. Sugar, exports of, 1860-65.
49. Molasses, exports of, 1860-65.
50. Molasses, shipments up river, 1863-65.
51. Flour, Pork, Bacon, Lard, Beef, Whisky and Corn, amount, export and destination, 1863-65.
52. Staves, exports of, 1863-65.
43. Coffee, Sugar, Molasses, Salt, direct imports of, 1858-65.
44. New and Old Basins, receipts, at 1864-65.
45. Cattle, receipts of, 1864-65.
46. Cotton, exports of, destination, 1855-65.
47. Tobacco, exports of, destination, 1855-65.
53. Produce, exports of each class, 1864-65.
54. Cotton, receipts of, 1864-65.
55. Cotton, total crop, receipts at New Orleans, average price per bale, total value, date of first receipt and receipts previous to September 1, 1855-65.
56. Cotton, Middling, comparative prices of, 1860-65.
57. Cotton, total crop, received at New Orleans, average price per pound, 1853-65.
58. Cotton quotations for Middling at the close of each month, with rate of gold and sterling bills, 1864-65.
58. Cotton quotations of highest and lowest point in each month for Low Middling to Middling, 1864-65.
59. Cotton, receipts, exports and stock, 1855-65; Cotton, statement of September 1, 1865.
60. Cotton and Tobacco, exports and destination, 1867-77.
61. Cotton and Tobacco, exports and destination, 1876-82.
62, Produce, imports from the interior, 1872-82.
63. Cotton and Tobacco, receipts, exports and stock, 1869-79.
64. Produce, imports from Northern ports by Steamships and Sailing Vessels, 1876-79.
65. Produce, exports of, 1877-78.

66. Old Basin, receipts at, 1878-78.
67. New Baisin, receipts at, 1878-79.
68. Live Stock, arrivals of, kind, 1878-79; prices of different kinds, 1878-79.
69. Produce, amount of each kind received, average price, total value, 1875-77.
70. Produce, amount of each kind received, average price, total value, 1877-79; comparative statement of total value, 1869-77.
71. Flour, Pork, Bacon, Lard and Corn, exports of and destination, 1876-79; Sugar and Molasses, exports of and destination, 1874-79.
72. Produce, amount of receipts, average price and total value, 1880-82.
73. Produce, exports of, 1880-82.
74. Coffee, Sugar, Molasses and Salt, direct imports of, 1879-82
75. Imports, from Northern ports by vessels, 1880-81.
76. Clearing-house, statement of, 1873-79.
77. Ships, Brigs, Schooners, Sloops and Steamboats, arrivals of, 1832-36, by month.
78. Ships, Brigs, Schooners, Sloops and Steamboats, arrivals of, 1854-57.
79. Flatboats, arrivals of, by month, 1856-57.
80. Seagoing Vessels, arrival of aggregate tonnage, average tonnage, per vessel, 1850-60.
81. Seagoing Vessels, kind, arrivals of, 1847-65.
82. Clearances of Vessels, 1863-65, by months and kind.
83. Ships, Barks, Brigs, Schooners, Steamships and Steamboats, monthly arrivals, 1872–77.
85. and 84. Ships, Barks, Brigs, Schooners, Steamships and Steamboats, monthly clearances, 1874-79; statement of vessels belonging to New Orleans, 1877.
86. Vessels, number and tonnage of, kind of cargo, from whence and total tonnage by months, arrival from New Orleans, 1876-77.
87. Vessels, number and tonnage of, kind of cargo, from whence and total tonnage by months, cleared in New Orleans, 1876-77.
88. Vessels, number and tonnage of, kind of cargo, from whence and total tonnage by months, arrived in New Orleans, 1877-78.
89. Vessels, number and tonnage of, kind of cargo, from whence and total tonnage by months, cleared from New Orleans, 1877.
90. Vessels, number of, owned in New Orleans, 1878-79.
91. Vessels, number and tonnage of, kind of cargo, from whence, and total tonnage by months, arrived in New Orleans, 1878–79.
92. Vessels, number and tonnage of, kind of cargo, from whence, and total tonnage by months, cleared in New Orleans, 1878-79.
93. Vessels, kind of, arrivals by months, 1876-81.
94. Vessels, number and tonnage of, cleared whence, 1880-81.
95. Vessels, number and tonnage of, owned in New Orleans, 1881.
96. Vessels, number and tonnage of, arrived whence, 1880-81.

TABLE L.

1. Population of Louisiana, in the aggregate, and as white, free colored, slave, Chinese and Indian, at each census taken, from 1810 to 1880.
2. Population and males of voting age in each parish of Louisiana. (Census Bulletin No. 294) tenth census of the United States, 1880.
3. Summary of Area of States, Territories, etc., in square miles.
4. Number of Acres of Sugarcane and number of hogsheads of sugar and gallons of molasses produced therefrom in the year 1879.
5. Population City of New Orleans, 1769, 1785. 1788, 1797, 1810, 1820, and 1830.
6. Population of the Cities of New Orleans, Lafayette and McDonoughtown, 1840.
7. Population of New Orleans, 1850.
8. Population of Cities and Towns in Louisiana, 1850.
9. Population of New Orleans, 1860.
10. Population of Cities and Towns in Louisiana, 1860.
11. Population of New Orleans, 1870.
12. Population of City of New Orleans, 1870, 1860 and 1850.
13. Population of New Orleans, in 1880, by ages, sex, nativity and race.
14. Changes in the population of New Orleans in 1866, 1870 and 1880.
15. Changes in the population of New Orleans between the ages of 20 and 50 years, during 1860, 1870 and 1880.
16. Population, deaths and death rates per 1000 population, by age and race in New Orleans, in 1880.
17. Population, deaths and death rates per 1000 population, by sex and race, in New Orleans, in 1880.
18. Census of the City of New Orleans, by Wards and Districts, according to race and sex, 1880.
19. Population of 100 principal Cities of the United States.

TABLE M.

1. Meteorological Record of 1882, for the city of New Orleans, together with the daily mortality.

TABLE M—Continued.

2. Mortality of New Orleans during 1882, classified according to diseases, months and races.

3. Mortality of New Orleans during 1882; deaths in public institutions, as recorded by Coronor, classified according to their race and nationality.

4. Deaths in New Orleans during 1882, classified according to nativities.

5. Deaths in New Orleans during 1882, classified according to sex.

6. Death rate in New Orleans during 1882, per 1000 inhabitants.

7. Deaths in New Orleans during 1882, classified according to ages.

8. Deaths in New Orleans during 1882, in public institutions.

9. Deaths in New Orleans during 1882, reported by Coroner.

10. Still-births in New Orleans during 1882, classified by month, sex and race.

11. Mortality from some of the principal diseases in New Orleans during 1882, classified according to nativity.

12. Mortality from some of the principal diseases in New Orleans during 1882, classified according to age and color.

13. Births in New Orleans in 1882, classified according to color, sex and nativity of parents.

14. Marriages in New Orleans in 1882, classified according to color and nativities.

TABLE N.

1. Daily rainfall in New Orleans during a period of forty years—1840-1865, 1869-1882.

TABLE N—Continued.

1. Rainfall in New Orleans during a period of forty years—continued.

2. Table showing actual humidity, prevailing direction and average velocity of wind for each day during the months of April to October, during the years 1877, 1878, 1879, 1880, 1881, 1882, in New Orleans.

3. Maximum and minimum temperature, prevailing winds, number of cloudy and rainy days and rainfall during a period of forty years, in New Orleans.

4. Meteorological summary, year ending December 31, 1878.

5. Meteorological summary, year ending December 31, 1879.

6. Meteorological summary, year ending December 31, 1880.

7. Meteorological summary, year ending December 31, 1881.

8. Meteorological summary, year ending December 31, 1882.

Report of observations of temperature of water at Port Eads, from September, 1881, to April, 1882, inclusive.

Temperature of the water of the Mississippi, at Port Eads, La., 1882.

TABLE O.—Intra-Mural Sepulture in New Orleans. Tabulated Results of an Inspection of the Cemeteries of New Orleans, conducted by order of and under the immediate supervision of Joseph Jones, M. D., President of the Board of Health of the State of Louisiana, April, 1880–April, 1884. Girod Street Cemetery, 1833-1883 inclusive. Cypress Grove Cemetery, No. 1, 1841-1883. St. Patrick's Cemetery, 1841-1883. Charity Hospital Cemeteries, Nos. 1 and 2, 1850-1883. St. Joseph's Cemetery, 1855-1883. United States Chalmette National Cemetery. New St. Louis Cemetery, 1856-1883. Odd Fellows' Rest Cemetery, 1849-1883. Waters of Israel Cemetery, 1865-1883. Gretna Firemen's Cemetery, 1866-1875. St. Vincent de Paul Cemetery, 1851-1883. Cypress Grove Cemetery, No. 2, 1846-1883. Washington Cemeteries, 1843-1883. Temcine Deutsch Association Cemetery, 1858-1883. St. Louis Cemetery, No. 1, 1855-1883. St. Louis Cemetery, No. 2, 1843-1883. German Evangelical Lutheran, 1867-1883. Greenwood Cemetery, 1855-1883. Great Samaritan Colored Cemetery, 1871-1883. Union Benevolent Colored Cemetery, 1874-1879. St. Bartholomew Catholic Cemetery, 1857-1871. Gates of Prayer Cemetery, 1867-1883. Metairie Cemetery, 1874-1883. Campo-Santo Cemetery, 3d District, 1875-1883. Holt's Cemetery, 1879-1883. Hebrew Rest Cemetery, 1866-1883. Firemen's Cemetery, Algiers, 1878-1883. Dispersed of Judah Cemetery, 1846-1883. Grand Lodge Cemetery, 1869-1883. Mortuary Statistics of the Girod Street Protestant Cemetery, 1833-1883. Total deaths, and deaths by Yellow Fever, Small-Pox and Cholera.

TABLE O. *Continued*.—Intra-Mural Sepulture of New Orleans. Washington Cemeteries, burials from all causes classified by months, 1843-1883, and by Yellow Fever, Small-Pox and Cholera, Charity Hospital Cemeteries, Nos. 1 and 2, 1850-1883. Total deaths each month, and deaths caused by Yellow Fever, Small-Pox and Cholera.

TABLE O. *Continued.*—Intra-Mural Sepulture of New Orleans. Burials St. Vincent de Paul Cemeteries, total by months, and deaths caused by Yellow Fever, Small-Pox and Cholera, 185?-1883. St. Patrick's Cemetery, 1841-1883. Burials classified by months; also deaths by Yellow Fever, Small-Pox and Cholera.

TABLE O. *Continued.*—Intra-Mural Sepulture, New Orleans. St. Louis Cemetery, No. 1, 1855-1883. Burials classified by months, and deaths by Yellow Fever, Small-Pox and Cholera. St. Louis Cemetery, No. 2. 1843-1883. Deaths by months, and by Yellow Fever, Small-Pox and Cholera. New St. Louis Cemetery, 1856-1883. By months and by Yellow Fever, Small Pox, and Cholera.

TABLE P.—Mortuary, Meterological and Vital Statistics of New Orleans for the year 1883, classified according to months. Causes of deaths classified according to months, ages, sex and race for the year 1883.

MAPS, CHARTS AND PLANS, ILLUSTRATING THE TOPOGRAPHY AND SETTLEMENTS OF LOUISIANA, AND THE PROGRESSIVE DEVELOPMENT OF NEW ORLEANS, COLLECTED AND CLASSIFIED FROM ORIGINAL WORKS, BY JOSEPH JONES, M. D.

The great problem of effective drainage can best be elucidated by presenting a series of charts and plans illustrating the topography and progressive development of New Orleans.

The maps now presented furnish important data to mark the progressive advancement of the drainage system of New Orleans, and in connection with those of the Annual Report of 1880, are essential to the proper elucidation of many questions relating to the preventable causes of diseases and deaths, and to the climate and diseases of Louisiana.

No. 1—Carte de la Côte de la Louisiane depuis l'embouchure du Mississippi, jusqu'à la Baie de Mobile, par M. de Serigny, en 1719 et 1720.

No. 2—Vue de la Nouvelle-Orléans en 1719—Les Iles ou quartiers des Bourgeois sont entourés d'eau pendant trois mois de l'année vu le débordement des eaux du fleuve, depuis le 25 Mars jusqu'au 24 Juin. Devant la ville il y a une levée et par derrière un fossé et autres découlements.

No. 3—Embouchures du Mississippi d'après Guillaume Delisle, Juin, 1718.

No. 4—Carte de la Côte de la Louisiane, depuis l'embouchure de la Rivière du Mississippi, jusqu'a la Pointe de la Mobile—Voyage de la Louisiane fait par ordre du Roi—en l'année mil sept cent vingt, par le P. Laval, de la compagnie de Jésus.

No. 5—Carte de la Louisiane et cours du Fleuve St. Louis, par M. Le Page du Pratz, 1757. En l'Histoire de la Louisiane, contenant la découverte de ce vaste pays. A Paris MDCCLVIII.

No. 6—Parti de la Côte de la Louisiane. Dressée sur les manuscrits du Depôt des Plans de la Marine, par N. B., Ingr. du Roi et de la Marine, 1744.

No. 7—Plan of the City of New Orleans and the adjacent plantations, compiled in accordance with an ordinance of the Illustrious Ministry and Royal Charter, 24 December, 1798. Signed, Carlos Trudeau.

No. 8—Plan de la Nouvelle-Orléans. Sur les Manuscrits du Depôt des Cartes de la Marine. Par N. B., Ingr. de la M., 1744. Journal d'un Voyage fait par ordre du Roi dans l'Amérique, par le P. De Charlevoix, de la compagnie de Jésus; tome 6.

No. 9—Nouvelle-Orléans, capitale de la Louisiane, en l'année 1720, par M. Le Page du Pratz. Tome second, page 345.

No. 10—Plan de la Nouvelle-Orléans, telle qu'elle était en Mai, 1728.

No. 11—Plan of New Orleans in 1770, by Capt. Pittman, of the British army.

No. 12—Plan de la Nouvelle-Orléans, capitale de la Louisiane—Mémoires Historiques sur la Louisiane, composée sur les Memoires de M. Duinoud, par M. L. L. M. A Paris, chez J. B. Bauche, Libraire, MDCCLIII, avec appropriation et privilége du Roi.

No. 13—Plan de la Ville de la Nouvelle-Orléans, ou est marqué la levée de Terre qui la garantit de l'Inondation et l'augmentation des Maisons faites depuis le 1er Septembre, 1723. A la Nouvelle-Orléans, le 29 May, 1724. Signé, "De Pauger."

No. 14—Map of Louisiana, showing topographical features, prepared for the Medical and Surgical Memoirs of Joseph Jones, M. D., by T. S. Hardee, civil engineer.

No 15.—Chart illustrating the course of total mortality, the mortality of children under five years of age, and the chief fatal diseases in the City of New Orleans, during the six months ending June 30, 1880, with Meteorological Observations during the same period. p. cxcvi.

No. 16.—Chart illustrating the course of the total mortality, the mortality of children under five years of age and the chief fatal diseases of the City of New Orleans during the six months ending December 31, 1880, with meteorological observations during the same period. p. cxcvi.

No. 17.—Chart illustrating the increase of population in the City of New Orleans during a period of 94 years, together with the total mortality for each year, and the death rate per 1000 inhabitants per annum, also deaths from yellow fever; mean, maximum and minimum temperature and rainfall for a number of years, as far as obtainable. Compiled from statistics compiled by Joseph Jones, M. D. ccxcvi.

No. 18.—Map illustrating the Topography of New Orleans, and of the coast of Louisiana and Mississippi. This map will give a correct view of the nature of the coast of Louisiana and Mississippi to be guarded by quarantines, so as to protect these States and the Mississippi Valley from the introduction of foreign pestilence. Prepared for Joseph Jones, M. D., by T. S. Hardee, Civil Engineer.

No. 19.—Topographical and drainage map of New Orleans, prepared for Joseph Jones, M. D., by T. S. Hardee, Civil Engineer.

No. 20.—Perspective View of New Orleans and environs from the south.

No. 21.—Abstract of Ead's Jetties, prepared for the Medical and Surgical Memoirs of Joseph Jones, M. D., by T. S. Hardee, Civil Engineer.

This map contains a view of the Mississippi River from above the forts to the Gulf of Mexico.

ENGRAVINGS.

No. 1. Vacuum-Pneumatic Spirometer. Part II, p. 119.

No. 2. Mexican Idiots, "descendants" of the ancient Aztecs of Mexico. Part II, p. 128.

No. 3. Cranium (front and side view) of Mexican Aztec women. Part II, p. 130.

No. 4. Fossil Mammalia of the Valley of the Mississippi River. Cranium of Migalon Jeffersonii. Molar teeth of Mastodon Giganteus. Molar of Eliphas Primoginas, or Mammoth. Part II, p. 132.

No. 5. Four-legged child, J. Myotte, Cuban, June 16, 1878, about 5 weeks of age. Part II, p. 139.

No. 6. Miss J. Myotte Corban, about 4 years of age. Part II, p. 142.

No. 7. Miss J. Myotte Corban, age 17 years. Part II, p. 143.

No. 8. Double monster with two heads and two bodies, united at the sterna. Part II, p, 145.

No. 9. Theory of double monster, united by sterna. Part II, p. 245.

No. 10. Double monster with the lower portion of their trunks united. Part II, p. 148.

No. 11. Single-headed and double-bodied monster, with four arms and four legs. Part II, p. 149.

No. 12. Skeleton of single-headed and double-bodied monster. Part II, p. 149.

No. 13. Brain of single-headed and double-bodied monster. Part II, p. 150.

No. 14. South Carolina twins, or double-headed Nightingale; Millie and Chrissie. Part II, p. 151.

No. 15. J. H. Allen, Hermaphrodite. Part II, p. 156.

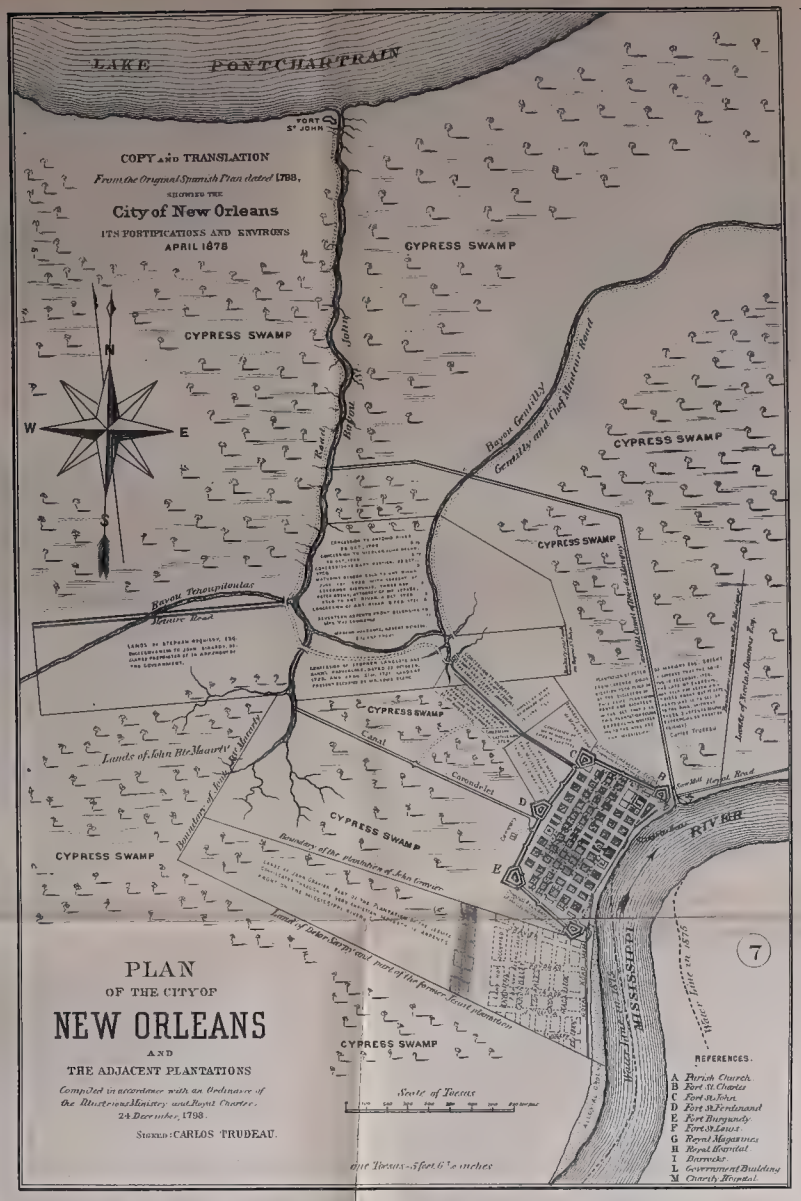
No. 16. J. H. Allen, Hermaphrodite. Part II, p. 157.

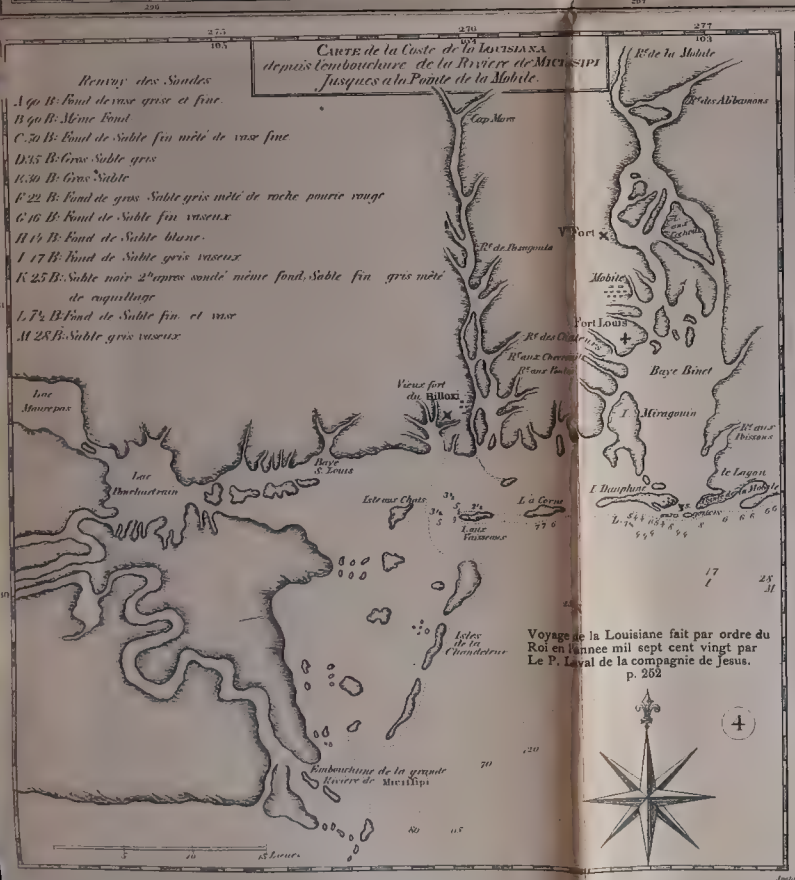
No. 17. Miss Emily Landry, the bearded and hairy girl of Louisiana. Part II, p. 158.

The various monographs, maps, charts and tables, composing this third volume of the Medical and Surgical Memoirs, have been printed at different times and in different places during the past 10 years, and therefore the author does not claim absolute uniformity, the question being rather the actual preservation of this great mass of elaborate and extensive scientific and statistical matter under the most difficult and adverse circumstances for the use of physicians and sanitarians.

The maps and tables have been distributed in binding, so as in such manner as best to secure their preservation.







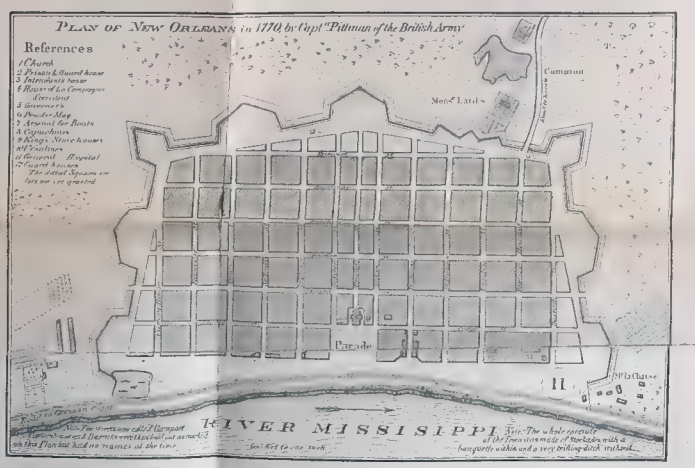


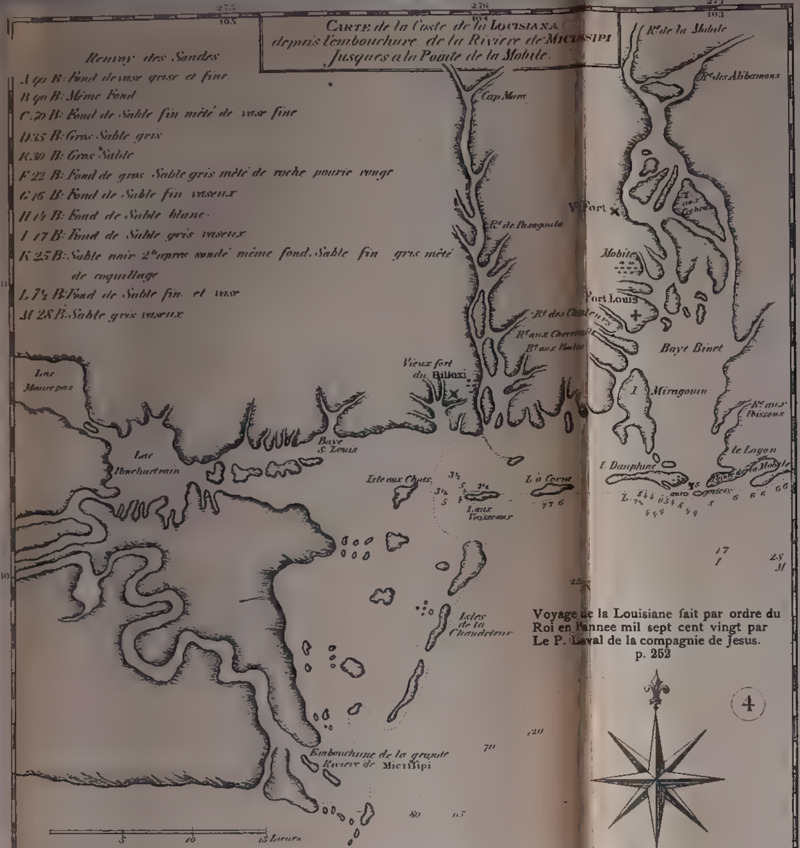
Carte de La Louisiane et, Course du Fleuve St. Louis
Par M. Le Page du Pratz 1757.
En l'Histoire de la Louisiane, contenant la decouverte de ce vaste pays.
A Paris. MDCCLVIII.

Journal d'un Voyage fait par ordre du Roi dans l'Amerique par le P. De Charlevoix; de la compagnie de Jesus, tome 6.
8



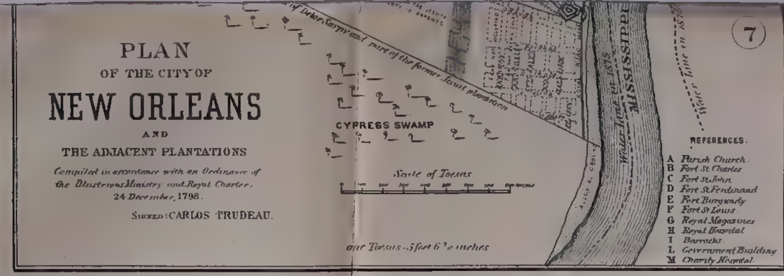
En l'annee 1720. Par M. Le Page du Pratz.
Tome second p. 345.
9







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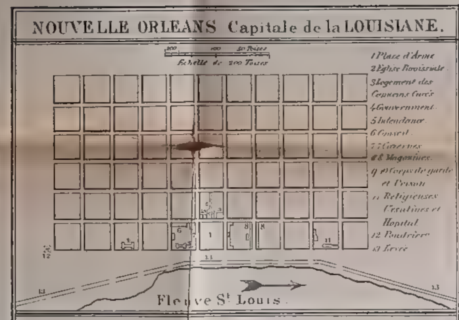




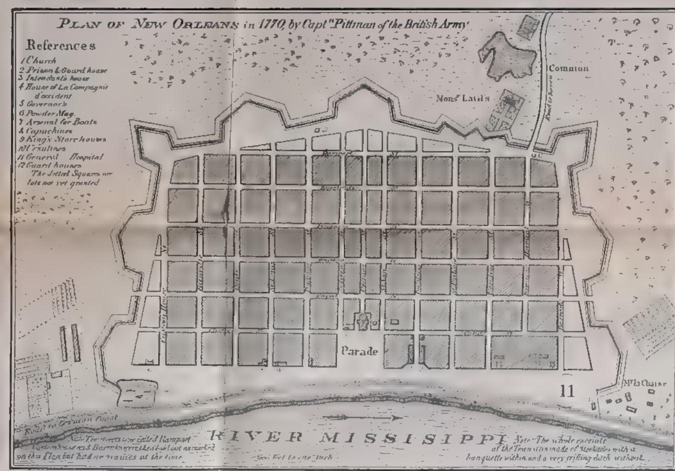
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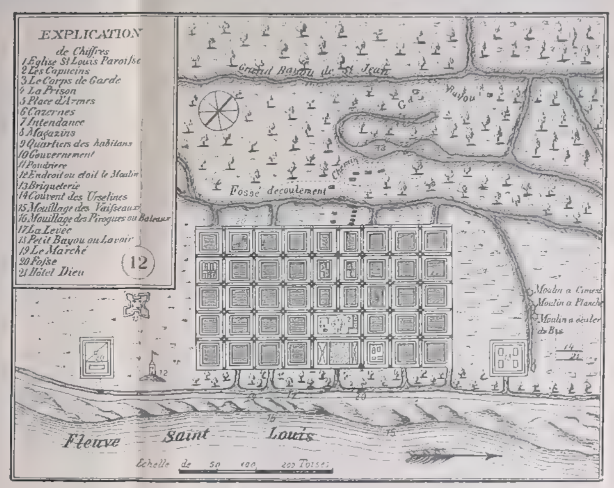
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En l'annee 1720. Par M. Le Page du Pratz.
Tome second p. 345.







Plan de la Nouvelle Orleans *Capitale de la Louisiane*

Mémoires Historiques sur La Louisiane composé sur les Mémoires de M. Dumond par M. L. L. M.

A Paris chez Cl. J. B. Bauche, Libraire, M.DCC.LIII. avec Approbation & Privilege du Roi.

CHARTS AND PLANS

Illustrating the Topography and Settlements of

LOUISIANA,

and the Progressive Development of

NEW ORLEANS

Collected & Classified from Original Works

BY

JOSEPH JONES, M.D.

New Orleans, January 1882.

MAP OF LOUISIANA

SHOWING

TOPOGRAPHICAL FEATURES

PREPARED FOR THE

MEDICAL AND SURGICAL MEMOIRS

—OF—

JOSEPH JONES, M. D.,

—BY—

T. S. HARDEE, CIVIL ENGINEER,

1879.

Total Area of State 39950 Square Miles

LAND CLASSIFICATIONS :

PRAIRIES | ALLUVIAL OR RIVER BOTTOM | PINE REGION | OAK UPLANDS | SEA MARSH

SCALE.

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MISSISSIPPI

TEXAS

GULF OF MEXICO

Smithland · Jefferson · MARSHALL · Carthage · Shelbyville · Hamilton · San Augustine · Millam · Jasper · Newton · Woodville · Beaumont · ORANGE · Mississippi City · Shieldsboro · Bay St. Louis · Pass Christian

SODO LAKE · BELLEVUE · SHREVEPORT · MANSFIELD · SODUSHATTA · CAMPTI · GRAND COOKS · MANY · COLFAX · ALEXANDRIA · MARKSVILLE · FORT ADAMS · VIDALIA · NATCHEZ · VICKSBURG · DELTA · TENSAS · MONROE · FARMERSVILLE · VIENNA · SPARTA · VERNON · WINNFIELD · HARRISONBURG · WATERPROOF · ST JOSEPH · DELCIANA · CLINTON · FELICIANA · WASHINGTON · FRANKLINTON · JACKSONVILLE · ST TAMMANY · COVINGTON · OPELOUSAS · BATON ROUGE · LIVINGSTON · SPRINGFIELD · PONTCHATOULA · ASCENSION · DONALDSONVILLE · ST JAMES CH · NEW ORLEANS · LAKE PONTCHARTRAIN · LAKE MAUREPAS · LAKE BORGNE · ST BERNARD · CHANDELEUR IS. · VERMILION BAY · MARSH ISLAND · CAILLOU BAY · TIMBALIER BAY · SOUTH PASS JETTIES · ABBEVILLE · FRANKLIN · NEW IBERIA · VERMILIONVILLE · LAKE ARTHUR · LAKE CHARLES · CALCASIEU · CAMERON · VERNON · RAPIDES · CATAHOULA · CONCORDIA · TENSAS · MADISON · CARROLL · MOREHOUSE · OUACHITA · UNION · LINCOLN · CLAIBORNE · BIENVILLE · BOSSIER · WEBSTER · DE SOTO · RED RIVER · NATCHITOCHES · SABINE · TERREBONNE · LAFOURCHE · ASSUMPTION · LAFAYETTE · ST MARTIN · ST MARY · IBERIA · ST LANDRY · CALDWELL · WINN · JACKSON · WEST CARROLL · EAST CARROLL · MADISON · TENSAS · CONCORDIA · AVOYELLES · POINTE COUPEE · WEST FELICIANA · EAST FELICIANA · WEST BATON ROUGE · EAST BATON ROUGE · IBERVILLE · ASSUMPTION · LAFOURCHE · TERREBONNE · ST MARY · ST MARTIN · LAFAYETTE · VERMILION · CAMERON · CALCASIEU · RAPIDES · AVOYELLES · ST LANDRY · ST TAMMANY · ST BERNARD · PLAQUEMINES · JEFFERSON · ORLEANS · LAFOURCHE · TERREBONNE · ASCENSION · LIVINGSTON · TANGIPAHOA · WASHINGTON · ST TAMMANY · ST HELENA · EAST BATON ROUGE · WEST BATON ROUGE · EAST FELICIANA · WEST FELICIANA · POINTE COUPEE · IBERVILLE · WEBSTER · BIENVILLE · CLAIBORNE · LINCOLN · UNION · MOREHOUSE · OUACHITA · CARROLL · MADISON · TENSAS · CONCORDIA · CATAHOULA · LA SALLE · GRANT · WINN · JACKSON · DE SOTO · NATCHITOCHES · SABINE · RED RIVER · BOSSIER

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LAKE CHARLES · LAKE ARTHUR · CALCASIEU LAKE · SABINE RIVER · BAYOU TECHE · ATCHAFALAYA BAY · BAYOU LAFOURCHE · BAYOU BOEUF · BAYOU CROCODILE · BAYOU DES GLAISES · BAYOU BLACK · BAYOU CHENE · BAYOU TENSAS · BAYOU MACON · BAYOU BARTHOLOMEW · BAYOU D'ARBONNE · BAYOU LAFOURCHE · BAYOU TERREBONNE · BAYOU PLAQUEMINE · BAYOU GOULA · BAYOU MANCHAC · BAYOU SARA · BAYOU GROSSE TETE · BAYOU CHEMARD · BAYOU PIERRE · BAYOU CROCHE · BAYOU LACOMBE · BAYOU CASOTTE · BAYOU DES ALLEMANDS · BAYOU TECHE · BAYOU BOEUF · BAYOU CROCODILE · BAYOU DES GLAISES · BAYOU BLACK · BAYOU CHENE · BAYOU TENSAS · BAYOU MACON · BAYOU BARTHOLOMEW · BAYOU D'ARBONNE · BAYOU LAFOURCHE · BAYOU TERREBONNE · BAYOU PLAQUEMINE · BAYOU GOULA · BAYOU MANCHAC · BAYOU SARA · BAYOU GROSSE TETE · BAYOU CHEMARD · BAYOU PIERRE · BAYOU CROCHE · BAYOU LACOMBE · BAYOU CASOTTE · BAYOU DES ALLEMANDS

TABULAR VIEW OF THE MORTUARY STATISTICS OF NEW ORLEANS. BY JOSEPH JONES M., D., PRESIDENT BOARD OF HEALTH, STATE OF LOUISIANA.

TABLE ILLUSTRATING THE RELATIONS OF THE POPULATION OF NEW ORLEANS TO THE TOTAL MORTALITY FROM ALL CAUSES, DURING A PERIOD OF NINTY-FOUR YEARS. COMPILED BY PROF. JOSEPH JONES, M. D.

Year.	Population.	No. of Deaths	Death Rate per 1000 Inhabitants.	Year.	Population.	No. of Deaths	Death Rate per 1000 Inhabitants.
1787	5,284	338	63.98	1844	86,632	4,620	53.33
1796	8,756	638	72.86	1845	89,261	2,783	31.17
1808	17,081	773	45.25	1846	102,070	4,220	41.34
1810	17,242	963	55.85	1847	108,699	9,043	83.19
1811	18,235	1,239	67.94	1848	115,503	7,407	64.12
1812	19,229	624	32.50	1849	122,511	9,862	80.49
1813	20,212	939	46.45	1850	129,747	7,819	60.26
1814	21,216	926	43.69	1851	138,590	7,275	52.48
1815	22,209	1,252	56.36	1852	147,441	8,693	58.95
1816	23,303	651	27.93	1853	154,132	15,787	102.42
1817	24,196	1,772	73.27	1854	156,556	11,347	72.47
1818	25,190	1,106	43.90	1855	158,980	10,096	63.50
1819	26,183	2,138	81.65	1856	161,404	5,689	35.24
1820	27,176	1,766	64.98	1857	163,828	5,581	34.07
1821	29,441	1,165	39.57	1858	165,450	11,720	70.83
1822	31,706	2,734	86.22	1859	166,500	6,849	41.13
1823	33,971	1,662	48.92	1860	168,670	7,341	43.52
1824	36,236	1,748	48.23	1861	169,907	5,772	33.97
1825	38,501	2,177	56.54	1862	171,134	6,278	36.10
1826	40,766	1,248	30.61	1863	172,361	7,172	41.61
1827	43,031	1,057	24.56	1864	173,588	8,498	48.95
1828	45,296	1,490	32.89	1865	174,815	7,016	40.13
1829	47,561	2,520	52.98	1866	178,042	7,754	43.55
1830	49,826	2,022	40.58	1867	181,269	10,096	55.57
1831	52,455	1,926	36.71	1868	184,496	5,343	28.96
1832	55,084	8,099	147.01	1869	187,723	5,593	29.79
1833	57,713	4,976	86.22	1870	191,418	6,942	36.26
1834	60,342	3,687	61.10	1871	193,412	6,059	31.24
1835	62,971	3,873	61.50	1872	196,406	6,588	33.54
1836	65,600	2,734	41.67	1873	198,000	7,995	40.19
1837	68,229	4,807	70.45	1874	201,394	7,193	35.71
1838	70,858	2,606	36.77	1875	203,888	6,535	32.05
1839	73,487	3,934	53.53	1876	206,382	6,685	32.39
1840	76,116	2,977	39.11	1877	208,876	7,169	34.32
1841	78,745	4,549	57.76	1878	211,371	10,717	50.70
1842	81,374	3,375	41.47	1879	213,865	5,122	23.94
1843	84,003	4,050	48.21	1880	216,359	5,623	25.98

TABLE ILLUSTRATING DEATHS AND DEATH RATE FROM ALL CAUSES, AND FROM YELLOW FEVER, IN THE CITY OF NEW ORLEANS DURING A PERIOD OF SIXTY-FOUR YEARS. COMPILED BY PROF. JOSEPH JONES, M. D.

Year.	Deaths from all causes.	Deaths from Yellow Fever.	Death Rate per 1000 from all causes.	Death Rate per 1000 from Yellow Fever.	Year.	Deaths from all causes.	Deaths from Yellow Fever.	Death Rate per 1000 from all causes.	Death Rate per 1000 from Yellow Fever.
1817	1,772	823	73.27	3.40	1849	9 862	769	80.49	6.20
1818	1,106	115	43.90	0.40	1850	7,819	107	60.26	0.80
1819	2,138	425	81.65	1.60	1851	7,275	17	52.48	0.10
1820	1,766	400	64.98	1.40	1852	8,693	456	58.05	3.00
1821	1,165	....	39.57	....	1853	15,787	7,849	102.42	50.00
1822	2,734	808	86.22	2.50	1854	11,347	2,425	72.47	15.40
1823	1,662	1	48.92	0.01	1855	10,096	2,670	63.50	16.80
1824	1,748	108	48.23	0.30	1856	5,689	81	35.24	0.50
1825	2 177	49	56.54	0.10	1857	5,581	200	34.07	1.20
1826	1 248	5	30.61	0.01	1858	11,720	4,855	70.83	29.30
1827	1,057	109	24.56	0.20	1859	6 849	92	41.13	0.50
1828	1,490	130	32.89	0.30	1860	7,341	15	43.52	0.09
1829	2,520	900	52.98	1.90	1861	5,772	....	33.97	....
1830	2,022	117	40.58	0.20	1862	6,278	2	36.10	0.01
1831	1,926	2	36 71	0.01	1863	7,172	2	41.61	0.01
1832	8,099	400	147.01	0.70	1864	8,498	6	48.95	0.03
1833	4,976	1,000	86.22	17.30	1865	7,016	1	40.13	0.01
1834	3 687	95	61.10	1.50	1866	7,754	185	43 55	1.00
1835	3,873	284	61.50	4.50	1867	10 096	3,107	55.57	17.10
1836	2,734	5	41.67	0.08	1868	5,343	3	28.96	0.02
1837	4,807	1,300	70.45	19.00	1869	5,593	3	29.79	0.02
1838	2 606	17	36.77	0.20	1870	6,942	588	36.26	3 10
1839	3,934	800	53.53	10.80	1871	6,059	54	31.24	0.20
1840	2 977	3	39.11	0.04	1872	6,588	39	33.54	0.20
1841	4,549	1,325	57.76	16.80	1873	7,995	226	40.19	1.10
1842	3,375	211	41.47	2.60	1874	7,193	11	35.71	0.05
1843	4 050	187	48 21	5.70	1875	6,535	61	32.05	0.30
1844	4 620	148	53.33	1.70	1876	6,085	42	32.30	0 20
1845	2,783	2	31.17	0.01	1877	7.193	1	34.32	0.01
1846	4,220	160	41.34	1.50	1878	10,717	4,056	50.79	19.20
1847	9,043	2,804	83.19	25.80	1879	5,122	19	23.94	0.00
1848	7,407	872	64.12	7.50	1880	5,623	2	25.98	0 009

TABLE ILLUSTRATING MORTALITY FROM SOME OF THE PRINCIPAL DISEASES, AND TOTAL MORTALITY; TOGETHER WITH THE DEATH RATE PER 1000 INHABITANTS, OF THE DIFFERENT DISTRICTS OF THE CITY OF NEW ORLEANS, FOR THE YEAR 1880.

Districts	First District	Second District	Third District	Fourth District	Fifth District	Sixth District	Seventh District	Deaths in Charity Hospital
Population — White	43,319	31,368	33,732	30,625	5,022	11,951	3,112	
Population — Colored	14,126	13,301	11,856	6,910	3,834	4,078	3 125	
Population — Total	57,445	44,669	45,588	37,535	8,856	16,029	6,237	
Yellow Fever	2	....	....	....	....	....	....	....
Malarial Fever	74	62	89	42	7	10	2	38
Typhoid Fever	7	16	16	9	....	6	....	3
Scarlet Fever	19	12	15	4	....	3	....	....
Measles	20	20	35	13	2	6	....	....
Small Pox	....	....	1	....	....	....	....	....
Diptheria	13	14	20	18	7	7	2	....
Diarrhœal Diseases	72	22	36	73	7	7	4	69
Congestion of Brain	40	65	18	18	5	3	2	9
Convulsions	55	21	45	28	8	19	5	1
Phthis Pulmonalis	222	168	135	114	25	29	9	159
All other deaths	860	715	758	401	81	230	104	378
Number of Deaths — Total	1,393	1,115	1,161	720	142	329	128	657
Number of Deaths — Whites	884	699	774	506	91	196	62	422
Number of Deaths — Colored	509	416	387	214	51	123	66	235
Death Rate per 1000 Inhabitants per annum — Yellow Fever	0.05	....	....	....	....	....	....	....
Malarial Fever	1.28	1.39	1.79	1.11	0.79	0.62	0.32	....
Phthisis Pulmonalis	3.86	3 76	2.76	3 37	2.82	1.80	1.44	....
Whites	20 40	22.28	22.94	16 52	18.12	16.40	19.92	....
Colored	36.10	31.27	32.62	30 96	13.30	30.16	21.12	....
Total	24.24	24.96	25.47	19.18	16.03	20.52	20.52	....

CENSUS OF THE STATE OF LOUISIANA—FROM THE TENTH CENSUS OF THE UNITED STATES.

The following statement exhibits the results of the first count of population according to the schedules returned to the Census Office by the Enumerators of the several districts concerned.

The statement of the population in relation to any township, town, city, or county is still subject to possible corrections by reason of the discovery of omissions or duplications of names in the lists of inhabitants returned.

	Total.	Male.	Female	Native.	Foreign	White.	Colored*
The State	940,263	468,911	471,352	886,119	54,144	455,063	485,200

PARISHES.	Total.	Male.	Female	Native.	Foreign	White	Colored
Ascension	16896	8507	8389	16441	455	5966	10930
Assumption	17010	8632	8378	16789	221	8937	8073
Avoyelles	16747	8663	8084	16475	272	8482	8265
Bienville	10442	5234	5208	10422	20	5456	4986
Bossier	16045	8187	7858	15954	91	3252	12793
Caddo	26305	13159	13146	25665	640	6922	19383
Calcasieu	12488	6473	6015	12174	314	9924	2564
Caldwell	5770	2888	2882	5740	30	2873	2897
Cameron	2415	1215	1200	2364	51	2087	328
Catahoula	10287	5248	5039	10201	86	5729	4558
Claiborne	18858	9473	9385	18825	33	8544	10314
Concordia	14914	7525	7389	14798	116	1317	13597
De Soto	15605	7721	7884	15535	70	5115	10490
East Baton Rouge	19986	10058	9928	19475	511	7110	12876
East Carroll	12147	6330	5817	11979	168	1026	11121
East Feliciana	15132	7348	7784	14890	242	4495	10637
Franklin	6495	3281	3214	6418	77	2702	3793
Grant	6188	3096	3092	6161	27	3320	2868
Iberia	16686	8538	8148	16202	484	8101	8585
Iberville	17600	8914	8686	17232	368	4805	12795
Jackson	5328	2636	2692	5324	4	2925	2403
Jefferson	12166	6188	5978	11170	996	4864	7302
Lafayette	13236	6702	6534	12970	266	7696	5540
Lafourche	19113	9762	9351	18733	380	11287	7826
Lincoln	11075	5555	5520	11048	27	6175	4900
Livingston	5258	2695	2563	5121	137	4265	993
Madison	13908	7088	6820	13754	154	1251	12657
Morehouse	14206	7086	7120	14111	95	3544	10662
Natchitoches	19722	9764	9958	19473	249	7642	12080
Orleans	216140	100919	115221	174965	41175	158379	57761
Ouachita	14723	7407	7316	14480	243	4516	10207
Plaquemines	11575	6241	5334	10690	885	4251	7324
Pointe Coupee	17799	9105	8694	17566	233	4782	13017
Rapides	23597	11984	11613	23237	360	9526	14071
Red River	8573	4347	4226	8540	33	2506	6067
Richland	8440	4429	4011	8360	80	3204	5236
Sabine	7344	3691	3653	7313	31	5486	1858
St. Bernard	4405	2439	1966	4016	389	2104	2301
St. Charles	7161	3719	3442	6987	174	1400	5761
St. Helena	7504	3803	3701	7456	48	3326	4178
St. James	14714	7632	7082	14393	321	4850	9864
St. John Baptist	9686	5023	4663	9415	271	3855	5831
St. Landry	40002	20534	19468	39475	527	20471	19531
St. Martin	12662	6526	6136	12437	225	5782	6880
St. Mary	19891	10564	9327	19021	870	6717	13174
St. Tammany	6887	3522	3365	6550	337	4255	2632
Tangipahoa	9638	4881	4757	9365	273	5603	4035
Tensas	17824	9044	8780	17654	170	1574	16250
Terrebonne	17956	9296	8660	17646	310	8613	9343
Union	13526	6739	6787	13475	51	8016	5510
Vermillion	8735	4366	4369	8589	146	6779	1956
Vernon	5160	2520	2640	5149	11	4783	377
Washington	5190	2635	2555	5184	6	3475	1715
Webster	10005	5142	4863	9924	81	4323	5682
W. Baton Rouge	7667	3966	3701	7551	116	2252	5415
West Carroll	2776	1402	1374	2756	20	1347	1429
West Feliciana	12809	6355	6454	12646	163	2279	10530
Winn	5846	2914	2932	5835	11	4797	1049

* Including, in the State, 473 Chinese, 819 Indians and Half-breeds, 8 Half-Chinese, 1 West Indian, and 1 East Indian.

COMPARATIVE TABLES OF MORTALITY BY MONTHS DURING THE TWELVE YEARS—1869 to 1880.

Showing Deaths from Some of the PRINCIPAL DISEASES, TOTAL NUMBER OF DEATHS according to RACE and COLOR, and DEATH RATE per 1000 Inhabitants per annum.

JANUARY

	1869.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878	1879.	1880.
Population — White	141 000					155 000						159,000
Population — Colored	50 000					55,000						57,000
Population — Total	191 000					210,000						216,000
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	13	15	7	15	17	11	10	15	22	10	5	10
Typhoid Fever	6	4	7	3	9	3	2	3	4	2	2	6
Scarlet Fever	....	3	1	....	....	....	1	19	!	....	....	1
Measles	....	....	....	1	....	....	....	....	....	....	....	
Small Pox	3	69	....	....	64	87	32	8	126	13	....	
Diptheria	2	3	....	4	7	8	1	4	7	3	7	5
Diarrhœal Diseases	21	22	26	24	20	24	48	18	23	16	23	29
Congestion of Brain	11	7	6	14	17	12	8	8	7	2	15	6
Convulsions	16	28	21	23	21	15	26	14	17	15	7	15
Phthisis Pulmonalis	42	56	55	56	90	81	80	76	74	65	76	67
Deaths from all other causes	214	264	320	307	395	342	364	269	290	277	439	307
Total number of Deaths	328	471	443	447	642	583	572	434	571	403	574	446
Deaths — Whites	....	....	....	292	388	329	329	269	345	234	360	290
Deaths — Colored	....	....	....	153	249	242	232	165	226	169	214	156
Deaths — Not stated	....	....	....	2	5	12	11	....	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	24.85	33.02	25.47	25.47	20.82	26.71	18.11	27.87	21.88
Colored	....	....	....	36.72	59 76	52 80	50 61	36.00	49.31	36 87	46.69	32.84
Total	20 60	29.59	27.83	28.08	40.33	33 31	32 68	24 80	32.62	23 02	32.80	24.77
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	0 81	0.94	0.44	0.94	1.06	0.63	0.57	0 85	1.25	0.57	0.28	0 55
Phthisis Pulmonalis	2.64	3 52	3.46	3.52	5.65	4.63	4.57	4 34	4.22	3.71	4 34	3.72

FEBRUARY

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	8	9	11	20	14	12	8	14	26	7	3	13
Typhoid Fever	4	5	5	5	9	1	5	6	8	2	1	4
Scarlet Fever	2	5	....	....	....	1	1	20	....	....	....	1
Measles	2	....	....	9	1	....	....	....	....	....	....	1
Small-pox	1	56	2	2	83	82	44	25	101	20	....	
Diphtheria	....	....	2	5	1	4	6	5	2	4	4	4
Diarrhœal Diseases	8	10	16	35	27	18	16	14	9	15	13	15
Congestion of Brain	9	7	6	22	7	14	3	11	7	6	4	7
Convulsions	13	19	16	21	18	23	16	6	12	11	10	6
Phthisis Pulmonalis	43	52	54	81	58	64	84	60	81	55	73	69
Deaths from all other causes	202	266	233	430	338	262	271	290	259	391	252	318
Total number of Deaths	292	429	347	630	556	461	454	460	589	511	360	438
Deaths — Whites	....	....	....	407	312	279	290	302	316	324	231	271
Deaths — Colored	....	....	....	204	239	196	153	158	273	187	129	167
Deaths — Not stated	....	....	....	19	5	6	11	....	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	34.64	26.55	21.60	22 45	23 38	24.46	25.08	17.88	20.45
Colored	....	....	....	48 96	57.36	42 26	33.38	34 47	59.56	40 80	28 14	35.16
Total	18.24	26.95	21.80	39.58	34 93	27.48	25.94	26.28	33.65	29.20	20.57	24.33
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	0.50	0 56	0 69	1.25	0.88	0.68	0 46	0.80	1 14	0.40	0.17	0.75
Phthisis Pulmonalis	2 70	3 26	3 39	5.09	3.64	3.66	4.80	3.43	4.63	3.14	4 17	3.83

MARCH

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	13	20	15	20	20	12	14	13	12	16	11	18
Typhoid Fever	2	14	8	5	3	2	4	5	5	1	1	4
Scarlet Fever	....	....	....	....	....	....	2	27	3	1	....	6
Measles	22	2	....	2	6	....	....	9	7	....	....	4
Small-pox	1	121	....	5	79	88	94	22	260	52	....	
Diphtheria	1	....	....	3	....	6	10	2	4	4	3	5
Diarrhœal Diseases	21	11	31	14	34	14	11	21	21	15	17	17
Congestion of Brain	6	7	8	15	15	13	6	15	5	12	12	7
Convulsions	24	16	16	8	26	13	15	14	16	15	4	11
Phthisis Pulmonalis	48	81	84	58	66	52	67	94	86	77	77	85
Deaths from all other causes	270	328	328	300	364	252	238	337	369	241	251	245
Total number of Deaths	408	600	491	430	603	452	461	559	788	437	376	402
Deaths — Whites	....	....	....	278	323	250	263	347	415	259	222	241
Deaths — Colored	....	....	....	148	275	192	190	212	373	178	154	161
Deaths — Not stated	....	....	....	4	5	10	8	....	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	23.65	27.49	19 35	20.36	26 86	32.12	20.05	17.18	18.19
Colored	....	....	....	35.52	66.00	41.89	41.45	46 25	81 38	38 83	33.60	33.89
Total	25.63	37.69	30.84	27.01	37.88	25.82	26.34	31.94	45.02	24.97	21.48	22.34
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	0.81	1.25	0.94	1.25	1 25	0.68	0.80	0 74	0 68	0 91	0.63	1.00
Phthisis Pulmonalis	3.01	5 09	5.27	3 64	4.14	2.97	3.82	5.37	4 91	4.40	4.40	4.77

APRIL

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	16	20	15	14	17	16	19	19	23	23	8	14
Typhoid Fever	5	2	9	3	3	1	5	2	6	2	3	4
Scarlet Fever	2	7	....	1	1	....	2	18	4	....	....	3
Measles	45	2	2	10	6	....	....	30	2	1	....	20
Small-pox	2	122	....	5	67	94	62	25	157	31	....	
Diphtheria	4	1	1	2	2	9	4	2	3	10	4	2
Diarrhœal Diseases	35	19	64	24	108	24	18	17	32	32	28	20
Congestion of Brain	10	7	5	13	10	15	12	11	8	10	4	7
Convulsions	52	17	19	14	15	16	12	21	14	14	16	6
Phthisis Pulmonalis	72	74	56	49	68	79	65	58	57	66	74	68
Deaths from all other causes	312	274	269	283	303	355	323	244	249	286	232	317
Total number of Deaths	555	545	440	418	600	609	522	447	555	475	369	461
Deaths — Whites	....	....	....	264	341	349	300	241	316	278	251	326
Deaths — Colored	....	....	....	147	242	255	213	185	239	197	118	135
Deaths — Not stated	....	....	....	7	17	5	9	21	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	22.46	29.02	27.02	23.22	18.66	24.46	21.52	19.43	24.54
Colored	....	....	....	35.28	58 08	55.63	46.47	40.36	52.14	42 98	25.74	28.42
Total	34.86	34.24	27.64	26.26	37 69	34.80	29.82	25.54	31 71	27.14	21.08	25.61
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	1.00	1.25	0.94	0.88	1.06	0.91	1.08	1.08	1.31	1.31	0.46	0.77
Phthisis Pulmonalis	4 52	4.65	3.52	3 08	4.27	4.51	3.31	3.25	3.25	3.77	4.22	3.77

MAY

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	22	31	11	31	30	24	15	20	18	16	13	26
Typhoid Fever	7	7	4	5	4	4	4	3	5	7	3	3
Scarlet Fever	2	5	2	3	....	1	2	13	....	....	1	5
Measles	74	5	1	22	21	....	....	72	....	....	....	39
Small-pox	....	78	....	4	71	79	26	11	105	12	....	1
Diphtheria	1	4	....	6	2	6	6	4	3	3	2	4
Diarrhœal Diseases	48	61	38	68	238	66	38	47	54	55	42	45
Congestion of Brain	19	9	5	22	21	12	14	14	12	6	10	12
Convulsions	25	22	16	35	30	19	13	21	9	16	13	36
Phthisis Pulmonalis	59	53	59	79	73	67	52	70	71	68	71	69
Deaths from all other causes	345	346	275	438	440	270	233	326	461	352	354	351
Total number of Deaths	602	621	411	713	930	548	403	601	738	535	509	581
Deaths — White	....	....	....	450	568	331	272	362	433	325	336	361
Deaths — Colored	....	....	....	243	354	207	124	233	305	210	173	220
Deaths — Not stated	....	....	....	20	8	10	7	6	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	38.29	48 34	25.62	21 05	28.02	33 52	25 16	26.01	27.24
Colored	....	....	....	58 32	84.96	45 16	27.05	50 83	66.54	45.81	37.74	46.31
Total	37.82	39.01	25.82	44.79	58.43	31.31	23.02	34 34	42.17	30 57	29 08	32.27
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	1 38	1.94	0 69	1 94	1 88	1.37	0 85	1.14	1.02	0 91	0.74	1.44
Phthisis Pulmonalis	3.70	3.33	3.70	4.96	4.58	3.82	2.97	4.00	4.05	3.88	4.05	3.83

JUNE

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	19	50	35	18	23	24	26	23	47	26	16	32
Typhoid Fever	4	7	7	4	2	13	5	3	7	3	3	5
Scarlet Fever	2	8	....	....	....	....	8	6	1	....	....	6
Measles	51	9	....	17	13	....	....	63	1	....	....	23
Small-pox	3	59	....	1	3	73	30	10	137	18	....	
Diphtheria	2	2	....	....	1	10	....	5	3	6	5	9
Diarrhœal Diseases	55	81	67	41	56	33	81	62	101	52	53	56
Congestion of Brain	9	4	20	12	19	10	15	6	22	9	9	15
Convulsions	34	28	26	30	27	18	24	27	19	16	17	14
Phthisis Pulmonalis	62	64	74	66	58	58	59	64	92	108	37	70
Deaths from all other causes	284	361	306	374	326	278	303	346	201	189	262	343
Total number of Deaths	525	673	535	572	562	517	551	615	633	427	402	573
Deaths — Whites	....	....	....	336	339	310	346	363	355	271	248	376
Deaths — Colored	....	....	....	219	220	193	192	238	278	156	154	197
Deaths — Not stated	....	....	....	17	10	14	13	14	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	28.59	28 25	24 00	26 78	28.10	27.48	20 98	19 20	28.37
Colored	....	....	....	52 56	52 80	42 11	41 89	51 92	60 65	34 03	33 60	41.47
Total	32.98	42.28	33.61	35 93	35 31	29 54	31.48	35.14	36 17	24 40	22.97	31.83
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	
Malarial Fever	1.19	3.14	2.13	1.12	1.57	1.37	1 49	1.31	2.68	1.40	0.91	1.77
Phthisis Pulmonalis	3.89	4.02	4.65	4.14	3 64	3.31	3.37	3.66	5 25	6.17	2.11	3.89

JULY

	1869.	1870.	1871.	1872	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.
Population — White	141,000					155,000						159,000
Population — Colored	50,000					55,000						57,000
Population — Total	191 000					210 000						216,000
Yellow Fever	1	....	....	....	3	....	....	....	....	26	3	1
Malarial Fever	47	43	40	34	62	67	39	55	41	47	33	26
Typhoid Fever	6	5	7	1	4	17	7	9	9	3	6	7
Scarlet Fever	2	5	2	1	1	....	20	5	....	....	....	11
Measles	20	3	6	10	16	....	....	20	1	....	....	9
Small Pox	....	14	....	....	11	41	24	17	56	5	....	
Diphtheria	6	....	1	3	3	13	7	4	1	5	2	6
Diarrhœal Diseases	54	42	46	30	71	52	62	54	49	39	57	32
Congestion of Brain	15	8	17	17	29	22	15	19	9	11	8	11
Convulsions	33	20	26	12	45	21	31	19	17	18	10	14
Phthisis Pulmonalis	67	66	58	56	88	68	77	82	70	69	98	67
Deaths from all other causes	300	291	285	313	440	399	341	351	254	269	205	238
Total number of Deaths	551	497	488	483	773	700	622	635	504	492	422	422
Deaths — Whites	....	....	....	303	523	457	399	394	323	317	262	276
Deaths — Colored	....	....	....	177	244	231	209	228	181	175	160	146
Deaths — Not stated	....	....	....	3	6	12	14	13	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	25.78	44.51	35 31	30.89	30 50	25.00	24.47	20.28	20.82
Colored	....	....	....	42.48	58.56	51.40	45.41	49.71	39.49	38.18	34.91	30.73
Total	34.67	31.22	30.65	30.34	48.56	40 00	35.51	36 28	28 80	28.11	24.11	23.44
Yellow Fever	0.06	....	....	....	0.18	....	....	....	....	1.49	0.17	0 05
Malarial Fever	2.95	2.70	2.51	2.18	3.54	3.83	2.23	3 14	2.34	2.68	1.88	1.44
Phthisis Pulmonalis	4.21	4.14	3.64	3.52	5.54	3.88	4.40	4.68	4.00	3.94	5.60	3 72

AUGUST

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
Yellow Fever	....	3	2	1	19	....	5	1	....	1025	4	
Malarial Fever	60	46	64	46	55	125	63	38	61	177	30	30
Typhoid Fever	9	8	8	6	7	18	8	5	5	10	1	4
Scarlet Fever	....	2	....	....	1	1	21	3	....	....	....	4
Measles	1	....	1	3	3	....	....	10	....	1	....	1
Small-pox	1	4	....	....	2	10	14	6	22	....	....	
Diphtheria	2	1	1	....	4	6	11	3	2	4	9	7
Diarrhœal Diseases	36	37	39	39	30	42	26	27	37	57	21	26
Congestion of Brain	7	14	21	26	14	76	3	24	....	33	7	9
Convulsions	16	11	22	29	29	19	27	5	9	43	16	21
Phthisis Pulmonalis	59	48	63	76	64	69	62	63	57	88	47	54
Deaths from all other causes	230	306	331	343	270	342	207	218	323	346	287	251
Total number of Deaths	421	480	551	569	498	708	447	403	516	1784	422	407
Deaths — Whites	....	....	....	370	341	515	275	252	325	1521	264	249
Deaths — Colored	....	....	....	192	151	188	168	147	191	263	158	158
Deaths — Not stated	....	....	....	7	6	5	4	4	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	31 49	29.02	39 85	21 29	19 51	25.16	117 74	20.43	18.79
Colored	....	....	....	46.08	36 24	41.00	36 65	32 07	41.67	57.38	34 47	33.26
Total	26.45	30.15	34.61	35.75	31.28	40.45	25.54	23 02	29.48	101 94	24.11	22.61
Yellow Fever	....	0.18	0.12	0.06	1.19	....	0 28	0.05	....	58.57	0 23	
Malarial Fever	3.77	2 89	4 02	2.89	3.46	7.14	3.60	2.17	3.48	10 21	1.71	1.66
Phthisis Pulmonalis	3.70	3.01	3.96	4.77	4.02	3.94	3 54	3 60	3.25	5.03	2.68	3.00

SEPTEMBER

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
Yellow Fever	....	231	9	5	108	2	24	20	....	1780	7	
Malarial Fever	61	90	65	38	91	50	100	83	79	229	19	79
Typhoid Fever	1	12	3	10	6	9	7	7	3	10	5	3
Scarlet Fever	....	2	....	....	....	....	28	1	1	....	....	1
Measles	....	....	....	1	....	....	....	4	3	1	....	
Small-pox	1	3	....	....	7	6	4	4	16	....	....	
Diphtheria	....	1	1	5	6	6	8	1	2	5	4	3
Diarrhœal Diseases	35	41	27	29	30	36	38	37	32	29	21	23
Congestion of Brain	7	13	12	12	15	14	13	30	12	29	4	19
Convulsions	25	22	9	21	23	10	25	11	12	49	8	16
Phthisis Pulmonalis	51	71	63	57	67	51	87	88	83	89	54	65
Deaths from all other causes	241	372	262	347	271	256	341	310	196	337	202	241
Total number of Deaths	422	858	451	425	624	440	675	596	439	2558	324	450
Deaths — Whites	....	....	....	260	457	291	448	403	290	2306	187	285
Deaths — Colored	....	....	....	161	160	148	222	181	149	252	137	165
Deaths — Not stated	....	....	....	4	7	1	[illegible]	12	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	22.12	38.89	22.52	34.68	31.20	22.44	178.51	14.47	21.50
Colored	....	....	....	38.64	38.40	32.29	48.44	39.49	32.51	54.98	29.89	34.73
Total	26.51	53.90	28.33	26.70	39 20	25.14	38.57	34.05	25.08	146.14	18.51	25.00
Yellow Fever	....	14.51	0.56	0.31	6.78	0.11	1.37	1.14	....	96.95	0.40	
Malarial Fever	3.83	5 05	4 08	2 38	5.72	2.85	5.71	4.74	4.51	13 08	1.08	4.38
Phthisis Pulmonalis	3 24	4.46	3 96	3.58	4.21	2 91	4.97	5.03	4.74	5.08	3.08	3.61

OCTOBER

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
Yellow Fever	2	242	22	24	79	6	20	15	....	1065	5	1
Malarial Fever	35	48	45	32	79	79	55	56	40	163	32	39
Typhoid Fever	10	6	7	6	3	16	1	2	7	....	2	7
Scarlet Fever	....	2	....	....	1	....	18	....	....	....	....	2
Measles	....	2	1	....	2	....	....	5	1	....	....	
Small-pox	5	....	....	1	8	2	4	5	13	....	....	
Diphtheria	1	1	2	5	7	7	7	....	1	2	10	13
Diarrhœal Diseases	30	28	27	26	34	46	20	35	26	24	26	25
Congestion of Brain	5	4	8	18	23	17	8	10	6	27	10	12
Convulsions	30	16	23	16	30	16	20	11	10	29	15	15
Phthisis Pulmonalis	60	55	66	79	89	91	58	66	63	59	101	60
Deaths from all other causes	296	277	240	325	358	366	262	234	249	476	291	292
Total number of Deaths	474	681	441	532	713	636	473	439	417	1845	492	466
Deaths — Whites	....	....	....	346	510	444	317	278	251	1631	317	326
Deaths — Colored	....	....	....	173	196	178	152	144	166	214	175	140
Deaths — Not stated	....	....	....	13	7	14	4	17	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	29 44	43.40	34.37	24.54	21.52	19.43	126.25	24.54	24 60
Colored	....	....	....	41.52	47 04	42.70	33.16	31.41	36.41	46.69	38.18	29.43
Total	29.78	42 78	27.70	33.42	44.79	36.34	27.03	25.08	23.83	105.43	28 11	25.88
Yellow Fever	0.12	15 20	1 38	1.50	4.96	0.34	1.14	0.85	....	60.85	0.28	0.05
Malarial Fever	2 19	3.01	2 82	2.01	4.96	4.51	3.14	3.20	2.28	9.21	1.83	2.16
Phthisis Pulmonalis	3.77	3.46	4.14	4.96	5.59	4.63	3.31	3.77	3.60	3.37	5.77	3.33

NOVEMBER

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
Yellow Fever	....	106	19	7	17	2	9	4	1	147	....	
Malarial Fever	27	46	26	11	25	36	18	41	29	55	20	32
Typhoid Fever	3	4	4	4	5	7	7	6	5	4	3	4
Scarlet Fever	1	1	....	....	1	....	20	1	....	....	....	6
Measles	2	....	....	1	1	....	1	9	....	....	....	
Small-pox	32	1	....	....	26	10	1	30	7	....	....	
Diphtheria	....	4	5	5	8	14	3	6	1	7	7	10
Diarrhœal Diseases	44	45	45	31	45	38	20	29	44	27	22	21
Congestion of Brain	2	12	16	6	16	6	9	20	9	6	8	11
Convulsions	20	21	22	15	16	28	19	12	11	22	9	10
Phthisis Pulmonalis	61	53	88	68	57	66	52	92	83	89	54	94
Deaths from all other causes	260	172	343	282	253	320	284	337	353	135	287	329
Total number of Deaths	452	465	568	430	500	527	443	587	543	492	410	517
Deaths — White	....	....	....	267	342	348	314	360	341	360	267	345
Deaths — Colored	....	....	....	156	154	170	125	220	202	132	143	172
Deaths — Not stated	....	....	....	7	4	9	4	7	....	....	....	
Death rate per 1000 inhabitants per annum — White	....	....	....	22.72	29.10	26.94	24.31	27.87	25.75	27.87	20.67	26 03
Colored	....	....	....	37.44	36.96	37.09	27.27	48.00	44 07	28.80	31.20	36.21
Total	28.39	29 21	35.68	27.01	31.41	30.11	25.31	33.54	31.03	28.11	23.43	28.72
Yellow Fever	....	6.66	0.67	0.44	1.06	0.11	0.51	0.23	0.05	8.40	....	
Malarial Fever	1.69	2.89	1 63	0 69	1.57	2.05	1.02	2.34	1.65	3.14	1 14	1.77
Phthisis Pulmonalis	3.83	3.33	5.52	4.27	3.58	3.77	2.97	5 25	4.74	5 08	3.08	5.22

DECEMBER

	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880
Yellow Fever	....	5	2	2	....	1	3	1	....	3	....	
Malarial Fever	21	17	14	12	11	32	16	24	17	8	12	19
Typhoid Fever	6	6	2	9	2	4	4	5	5	....	3	4
Scarlet Fever	2	4	....	....	....	1	21	2	....	....	....	10
Measles	....	....	1	....	....	....	....	2	....	....	....	
Small-pox	88	1	....	11	52	15	7	69	9	....	....	
Diphtheria	....	2	1	1	5	13	6	6	2	6	7	13
Diarrhœal Diseases	35	35	26	29	31	36	21	25	20	24	22	20
Congestion of Brain	9	7	15	9	15	3	10	16	9	4	4	16
Convulsions	21	26	8	15	10	24	27	8	9	15	12	13
Phthisis Pulmonalis	60	84	60	59	72	74	56	69	71	47	61	95
Deaths from all other causes	321	325	300	326	306	394	323	333	273	252	338	270
Total number of Deaths	563	512	429	473	504	597	494	560	415	359	459	460
Deaths — Whites	....	....	....	298	302	396	316	330	266	236	320	291
Deaths — Colored	....	....	....	170	200	195	171	219	149	123	139	169
Deaths — Not stated	....	....	....	5	2	6	7	11	....	....	....	
Death rate per 1000 inhabitants per annum — Whites	....	....	....	25 36	25.70	30.65	24.46	25.54	20 59	18 27	24.77	21.96
Colored	....	....	....	40 80	48.00	42.54	37.30	47.78	32.51	26.83	30 32	35.57
Total	35.37	32.16	26 95	29.71	31.66	34.11	28.23	32 00	23.71	20.51	26.23	25.55
Yellow Fever	....	0.28	0.12	0.12	....	0.05	0.17	0.05	....	0.17	....	
Malarial Fever	1.32	1.06	0 88	0.75	0.69	1.83	0.91	1.37	0.97	0 46	0.68	1.04
Phthisis Pulmonalis	3.77	5.27	3.77	3.70	4.52	4.23	3.20	3.94	4.05	2.68	3.48	5.27

TABLE SHOWING DEATHS FROM DIARRHŒAL DISEASES, BY MONTHS, DURING THE YEARS 1869 TO 1880, INCLUSIVE.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Death Rate per 1000 per annum	Population.
1869	21	8	21	35	48	55	54	36	35	30	44	35	422	2 21	191,000
1870	22	10	11	19	61	81	42	37	41	28	45	35	432	2 26	
1871	26	16	31	61	38	67	46	39	27	27	45	26	452	2 36	
1872	24	35	14	24	68	41	30	30	29	26	31	29	390	2 04	
1873	20	27	34	108	238	56	71	30	30	34	45	31	724	3 79	
1874	24	18	14	24	66	33	52	42	36	46	38	36	429	2 24	210,000
1875	48	16	11	18	38	81	62	26	38	20	20	21	399	1 90	
1876	18	14	21	17	47	62	54	27	37	35	29	25	386	1 83	
1877	23	9	21	32	54	101	49	37	32	27	44	20	449	2.13	
1878	16	15	15	32	55	52	39	57	29	24	27	21	385	1 83	
1879	23	13	17	28	42	53	57	21	21	26	22	22	345	1 64	
1880	29	15	17	20	45	56	32	26	23	25	21	22	331	1 53	216,000
Total	294	196	227	421	800	738	588	417	378	348	411	326	5144	....	
Average	24 5	16.3	18 9	35 0	66 6	61 5	49 0	34.7	31.5	29 0	34.2	27 2	428	2.11	202,500

TABLE SHOWING DEATHS FROM PHTHISIS PULMONALIS, BY MONTHS, DURING THE YEARS 1869 TO 1880, INCLUSIVE.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Death Rate per 1000 per annum.	Population.
1869	42	43	48	72	59	62	67	59	51	60	61	60	684	3.58	191,000
1870	56	52	81	74	53	64	66	48	71	55	53	84	757	3.96	
1871	55	54	84	56	59	74	58	63	63	66	88	60	780	4.08	
1872	56	81	58	49	79	66	56	76	57	79	68	59	784	4.10	
1873	90	58	66	68	73	58	88	64	67	89	57	72	850	4.45	
1874	81	64	52	79	67	58	68	69	51	81	66	74	810	3.85	210,000
1875	80	84	67	65	52	59	77	62	87	58	52	56	799	3.80	
1876	76	60	94	58	70	64	82	63	88	66	92	69	882	4 20	
1877	74	81	86	57	71	92	70	57	83	63	83	71	888	4.23	
1878	65	75	77	66	68	108	69	88	89	59	80	47	880	4.19	
1879	76	73	77	74	71	37	98	47	54	101	54	81	823	3.92	
1880	67	69	85	68	69	70	67	54	65	60	94	95	863	3.99	216,000
Total	818	774	875	786	791	812	866	750	826	837	857	808	9800	....	
Average	68.1	64.5	72.7	65.5	65.9	67.6	72.1	62.5	68.8	69.7	71.4	67.3	816	4.03	202,500

TABLE SHOWING DEATHS FROM MALARIAL FEVERS BY MONTHS, DURING THE YEARS 1869 TO 1880, INCLUSIVE.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Death rate per 1000 per annum	Population.
1869	13	8	13	16	22	19	47	60	61	35	27	21	342	1.79	191 000
1870	15	9	20	20	31	50	43	46	90	48	46	17	435	2.26	
1871	7	11	15	15	11	35	40	64	65	45	26	14	348	1.82	
1872	15	20	20	14	31	18	34	46	38	32	11	12	291	1.52	
1873	17	14	20	17	30	25	62	55	91	79	25	11	446	2.33	
1874	11	12	12	16	24	24	67	125	50	79	36	32	488	2.32	210 000
1875	10	8	14	19	15	26	39	63	100	55	18	16	383	1 82	
1876	15	14	13	19	20	23	55	38	83	56	41	24	401	1.91	
1877	22	20	12	23	18	47	41	61	79	40	29	17	409	1.95	
1878	10	7	16	23	16	26	47	177	229	163	55	8	773	3.68	
1879	5	3	11	8	13	16	33	30	19	32	20	12	202	0.96	
1880	10	13	18	14	26	32	26	30	79	39	32	19	336	1.55	216,000
Total	150	139	184	204	257	341	534	795	984	703	366	203	4854	....	
Average	12 5	11.6	15.3	17.0	21.4	28.4	44.5	66.2	82.0	58.6	30.5	16.9	404	1.93	202 500

DEATHS IN THE CHARITY HOSPITAL, CITY OF NEW ORLEANS, DURING THE YEAR 1880.

DEATHS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	....	....
Malarial Fever	1	2	2	2	....	4	....	5	4	7	9	2	38
Typhoid Fever	1	....	....	....	1	....	....	....	....	1	....	....	3
Diarrhœal Diseases	6	4	7	4	5	6	3	8	4	7	6	7	69
Congestion of Brain	1	....	1	....	1	....	....	....	1	2	2	1	9
Convulsions	....	....	....	....	....	....	....	....	1	....	....	....	1
Phthisis Pulmonalis	14	11	5	13	14	17	17	9	8	15	24	12	159
All other deaths	42	34	24	46	25	20	26	26	29	29	35	42	378
Total	67	51	39	65	46	47	46	48	47	61	76	64	657
Number of Whites	44	33	26	43	23	31	27	29	32	40	56	38	422
Number of Colored	23	16	13	22	23	16	19	19	15	21	20	26	233
Number of Chinese	....	2	....	....	....	....	....	....	....	....	....	....	2

ENDEMIC, EPIDEMIC,

CONTAGIOUS

—AND—

INFECTIOUS DISEASES.

MEASURES FOR THEIR PREVENTION AND ARREST

Malarial Fever, Yellow Fever, Typhoid Fever, Typhus Fever, Asiatic Cholera, Small-Pox, (Variola,) Modified Small-Pox, (Varioloid), Chicken-Pox, (Varicella), Vaccination, Spurious Vaccination, Measles, Scarlatina, Diphtheria, Phthisis Pulmonalis, Syphilis, Alcoholism.

Theory and Practice of Quarantine, Relations of Drainage, Soil, Food, Water and Climate, to Endemic, Epidemic, Contagious and Infectious Diseases.

Application of Measures for the Exclusion and Arrest of Yellow Fever and Small-Pox in the Mississippi Valley, Illustrated by the Quarantine and Sanitary Operations of the Board of Health of the State of Louisiana, during 1880, 1881, 1882 *and* 1883,

By JOSEPH JONES, M. D.,
156 Washington street, corner Camp, Fourth District, New Orleans, La.

CONTENTS.

	PAGE
Small-pox	ii
Measures instituted by the President and Officers of the Board of Health for the arrest of small-pox in New Orleans, during the years 1880, 1881, 1882 and 1883	iii
Cases and deaths of small-pox in New Orleans in 1882, classified according to the district in which they occurred, color and sex	v
Number of free vaccinations performed by the Sanitary Inspectors of the Board of Health during the years 1881, 1882 and 1883	vi
Cases of small-pox reported to the Board of Health, January 1, to September 30, 1883, classified according to districts in which they occurred	viii
Report of R. A. Bayley, M. D., Sanitary Inspector First District	ix
Report of C. Faget, M D., Sanitary Inspector Second District	x
Report of Eug. J. Mioton, M. D., Sanitary Inspector Third District	xi
Report of W. R. Mandeville, M. D., Sanitary Inspector Fourth District	xii
Report of A. M. Beret, M. D., Sanitary Inspector Fifth District	xiii
Report of Wm. Ryan, M. D., Sanitary Inspector Sixth and Seventh Districts	xiv
Summary of the efforts of the Board of Health to arrest small-pox	xv
Views of Hon. I. N. Marks with reference to the efforts of the officers of the Board of Health to arrest the spread of small-pox in New Orleans	xvii
Resolutions of Hon. Edward Booth, with reference to the efforts of the officers of the Board of Health of the State of Louisiana, for the suppression of small-pox in New Orleans	xvii
Cases and deaths from small-pox from January 1, 1883, to December 31, 1883, inclusive	xx
Total deaths from all causes, and from small-pox, in New Orleans, classified according to race, in New Orleans, during 1880, 1881, 1882 and 1883	xx
Deaths from small-pox classified according to nativity and race, 1880, 1883	xxi
Deaths from small-pox classified according to sex	xxii
General conclusions with reference to small-pox in Louisiana	xxiii
General results of the Quarantine operations of the Board of Health of the State of Louisiana for the exclusion of foreign pestilence, and more especially yellow fever, from the Mississippi Valley, during the years 1880. 1881, 1882 and 1883	xxiii
Condition of Mississippi Quarantine Station in 1880	xxiii
Repairs for the Mississippi Quarantine Station, advocated by the President of the Board of Health in 1880	xxiv
History of the erection, and amounts expended upon the Mississippi Quarantine Station	xxv
Quarantine of vessels from the infected port of Rio de Janeiro; discharge of cargoes at the Mississippi Quarantine Station; disinfection of coffee in the warehouses of New Orleans	xxviii
Inspection station established at mouth of Mississippi River	xxix
Reports of J. F. Finney, M. D., resident physician Mississippi Quarantine Station, and history of bark Excelsior, from Rio	xxx
Reports of J. F. Finney, M. D., detailing Quarantine operations at the Mississippi Station, 1880, 1881, 1882 and 1883	xxxi, xxxvii, lxxxi, civ
Report of Daniel W. Adams, M. D., Rigolet's Quarantine Station, 1880	xxxi
Reports of N. L. Sigur, M. D., Atchafalaya Quarantine Station	xxxiii
Quarantine work accomplished by the Louisiana Board of Health during 1880	xxxii
Outline of Quarantine operations, 1881	xxiv
Inspection of infected ships; yellow fever in Rio de Janeiro, 1880 and 1881	xxxv
Report of W. H. Carson, M. D., resident quarantine physician, Fort Pike, Louisiana	xxxviii

PAGE.

General review of the financial operations of the Board of Health of the State of Louisiana, 1870, 1881 xi
Outline of the Quarantine and Sanitary regulations of the Board of Health of the State of Louisiana for 1882 li
Mississippi Quarantine Station li
Rigolets Quarantine Station lii
Atchafalaya Quarantine Station lii
House to house inspections, and number of nuisances abated during 1882 liii
Mortality in New Orleans during 1882 liv
Mortality of 1882 compared with that of previous years lv
Yellow fever in 1882 lv
First case of yellow fever in 1882 in New Orleans, Henry Forbes lvi
Sanitary history of steamship Marco Aurelio lvii
Orders issued by President for arrest of yellow fever in 1882 lxi
Correspondence of British Consul with reference to steamship Marco Aurelio lxii
Letter of President to Governor of Louisiana with reference to the first case of yellow fever in 1882, and the return of the Marco Aurelio lxiii
Case of Louis Deschler, of 1010 Tchoupitoulas street—died in Charity Hospital, July 17, 1882 lxv
Report of Wm. R. Mandeville, Sanitary Inspector Fourth District, with reference to case of Louis Deschler lxvi
Case of yellow fever of Johannes Stroh, July 27, 1882 lxvii
Result of post mortem examination of Johannes Stroh lxviii
Instructions issued by President of Board of Health to Sanitary Inspectors, and police and municipal authorities of New Orleans, with reference to the execution of the sanitary measures for the arrest of yellow fever, in the month of August, 1882 lxx
Case of yellow fever, Malachias England lxxii
Extracts from the proceedings of the Board of Health, August 12, 1882; resolutions of Hon. I. N. Marks and Hon. Ed. Booth, relative to the United States Marine Hospital Service, and the appropriation by Congress for the arrest of contagious diseases lxxiii
Establishment of Quarantine against Pensacola lxxvii
Sanitary and medical inspection in the Mississippi Valley lxxxi
Mississippi Quarantine Station, 1882 lxxxiii
Atchafalaya Quarantine Station, 1882 lxxxiv
Outline of the Quarantine operations of the Board of Health of the State of Louisiana for 1883 lxxxiv
Quarantine proclamation of Governor lxxxv
Protection of New Orleans from the introduction of foreign pestilence through East Pearl River, or by way of Pearlington, Mississippi lxxxvi
Transfer of Quarantine Station from Fort Pike to Rabbit Island and East Rigolets lxxxvii
Erection of buildings at Atchafalaya Quarantine Station lxxxvii
The United States Marine Hospital Service, endorsed by the Board of Health of the State of Louisiana—Resolution of Hon. I. N. Marks lxxxix
Exclusion of vessels infected with yellow fever, and vessels from ports in which yellow fever was prevailing, from the waters of Louisiana in 1883 xc
The bark Berna, correction of false statements xci
The Board of Health pass additional Quarantine regulations, July 19, 1883 xciv
Proclamation of the Board of Health, July 23, 1883 xcv
Non-intercourse with cities and localities infected with yellow fever and Asiatic cholera xcv
Governor S. D. McEnery calls for the establishment of non-intercourse and the immediate removal of infected vessels from the Mississippi river xcv
Proceedings of Board of Health with reference to non-intercourse xcvi
Non-intercourse proclamation of Governor of Louisiana xcvii
His Excellency affirms that there was no power lodged in the State authorities to order vessels to Ship Island xcix
Governor McEnery makes final disposition to Dr. J. Farrar Patton, Quarantine Inspector of the National Board of Health c
United States Marine Hospital Service and Ship Island ci
Hon. I. N. Marks sustains his resolutions establishing non-intercourse with places infected with yellow fever ci

PAGE

Letter of President of Board of Health to Governor of Louisiana, with reference to the operation and effects of His Excellency's non-intercourse policy cii
Operations at Mississippi Quarantine Station for 1883 civ
Quarantine operations at English Lookout, 1883 cvii
Infected vessels from Rio cviii
Report of deaths from yellow fever at Rio de Janeiro, 1850-1883 cix
Climate of Rio de Janeiro cx
Introduction of yellow fever from Rio, in 1880, by bark Excelsior cxi
Mortality of the city of Vera Cruz, during 1881, 1882 and 1883, from yellow fever and other fevers cxii
Number and class of vessels inspected at the Mississippi Quarantine Station during four years, 1880, 1881, 1882 and 1883 cxiii
Maintenance of the Quarantine laws of Louisiana cxiv
Relations of National and State Quarantine cxiv
History of Quarantine in Louisiana cxiv
Inter-state Quarantine cxvi
Re-establishment of the United States Marine Hospital of New Orleans cxvii
Efforts of the Louisiana Board of Health to secure the passage of an act of Congress for the establishment of a floating ward or hospital in the harbor of New Orleans cxix
The maintenance of Quarantine on the Mississippi River and other points on the main channels of commerce by the State of Louisiana cxxi
Resistance of the Maritime Association of New Orleans to the Quarantine laws of the State of Louisiana cxxiv
Letter of the President of the Board of Health to the Governor of Louisiana relative to the necessity of Legislative action cxxiv
Letter of President of Board of Health to Speaker of House of Representatives of Louisiana, urging action on the bill entitled an act to regulate charges at the Mississippi River Station cxxvi
The relations of the Quarantine established by the State of Louisiana in 1855, to public health and commerce cxxvii
Letter of President of the Board to the Governor, the President of the Senate and the Speaker of the House of Representatives, May 30, 1882 cxxvii
Progress of commerce and population in Louisiana during the French domination, 1684–1763, when no Quarantine existed cxxxi
Progress of commerce and population and outline of epidemic visitations in Louisiana during the Spanish domination, 1763-1802, in which period the province was without Quarantine restrictions and laws cxxxv
Progress of commerce and population and outline of epidemic visitations in Louisiana during the American domination, 1803-1883, in which Quarantine has been established and maintained at various periods cxxxvi
General census of the Territory of Orleans in 1806 cxxxviii
Arrival and departure of vessels in the port of New Orleans, during 1807 cxxxviii
Births, deaths and marriages in New Orleans in 1808 cxxxviii
Doctors and surgeons in New Orleans in 1809 cxxxix
Hopital de Charitè of New Orleans cxxxix
Establishment of the first Quarantine and Board of Health in New Orleans cxliv
Interments in New Orleans in 1821 cxlvii
Mortality in New Orleans in 1817, 1819, 1820, 1833, 1837, 1839 and 1841 cxlvii
Quarantine proclamation of 1846 cxlix
Quarantine proclamation of 1847 cl
Establishment of the present system of Quarantine charges in June 18, 1855 cli
An act to establish Quarantine for the protection of the State of Louisiana, approved March 15, 1855 cli
Table showing arrivals of sea-going vessels and steamboats in the port of New Orleans each year, 1847-1859 clvi
Number and class of vessel passing the Mississippi Quarantine Station, 1880-1881 clvi
Value of imports and exports of New Orleans, 1805-1860 clvii
Value of exports and imports, 1870-1880 clviii
General conclusions with reference to Quarantine clix
Resolutions of Chamber of Commerce, 1874 clxi
Yellow fever epidemic of 1878 clxi

PAGE

Letter of President of Board of Health to Attorney General of Louisiana, with reference to the resistance of Quarantine laws by Morgan's Louisiana and Texas S. S. and R. R. Company clxvii
Expenditures by the Board of Health for Quarantine purposes, 1869-1882. clxviii
Letter of the President of the Board of Health to the Governor of Louisiana, with reference to the decision of Judge Monroe, issuing an injunction against the Board of Health, and declaring the Quarantine system of Louisiana, established by the act of 1855, illegal clxviii
Quarantine fees—they are legal exactions of the State in payment for special benefits—the Quarantine laws do not infringe the power of Congress to regulate commerce clxix
The Morgan Company required to pay the Quarantine fees fixed by the laws of Louisiana clxix
Highly important decision of the Supreme Court of the State of Louisiana, sustaining the Quarantine laws of the State and vindicating the action of the Board of Health in the collection of the Quarantine fees and in the maintenance of the Quarantine service clxiv
Opinion of Supreme Court of Louisiana, delivered by Associate Justice Fenner, January 21, 1884 clxix
Comparative view of the mortality of New Orleans, 1880 to 1883, inclusive clxxii
Relations of disease and deaths in New Orleans to race, temperature, rainfall and moisture—Outline of the sanitary work performed under the direction of the Board of Health of the State of Louisiana, during 1880, 1881, 1882 and 1883—Comparative tables of the diseases and mortality of the various districts of New Orleans clxxiv
Population of New Orleans, 1880-1884 clxxiv
Mortality of New Orleans, 1880, 1881, 1882 and 1883 clxxiv
Mortality from some of the chief fatal diseases in the city of New Orleans during the four years, 1880 to 1883, inclusive, by weeks clxxv
Mortality by weeks during four years, 1880 to 1883, inclusive, of deaths per 100 inhabitants clxxix
Mortality of New Orleans, during four years, 1880-1883, classified according to districts, race, sex and principal diseases clxxxvi
Reports of Sanitary Inspectors of Board of Health ..... clxxxi--cxciv
Comparative rates of mortality in New Orleans—Sanitary measures necessary to the health of its citizens, and mortuary statistics ..... cxciv—ccii
Mortality and sanitary history of New Orleans, 1881 ..... ccii—ccix
Mortuary statistics of New Orleans ccix
Deaths from sun-stroke ccx
Deaths reported by Coroner ccxi
Mortality of the colored race ccxi
Small-pox ccxii
Mortality and sanitary history of 1882—Deaths in New Orleans from principal diseases, classified according to districts, race and sex ..... ccxiii—ccxiv
Yellow fever in the Third District, 1882 ccxvii
Sanitary measures instituted by the President of the Board of Health for the arrest of yellow fever in 1882 ccxvii
Mortality of New Orleans during 1882 ccxxv
Relations of rainfall to mortality ccxxvi
Deaths of 1882, classified by race and general divisions ccxxvi
Malarial fever, 1882 ccxxvii
Mortality and sanitary history, 1883 ..... ccxxxii-ccxxxix
Mortality from principal diseases ccxl
Observations on the climate and health of Louisiana ..... ccxliv-cclxxv
Effects of the rivers, lakes, bays, and of the Gulf of Mexico, on the climate of Louisiana ccxlviii
Monthly and annual rainfall with deaths from yellow fever in New Orleans 1817, 1881 ccli
Monthly mean temperatures, and mean temperatures spring, summer, autumn and winter—Annual temperature in New Orleans during a series of years cclv
Extreme maximum and minimum temperatures in New Orleans during a series of years ccliii
Observations on the elevated temperature and sun-stroke or heat apoplexy of June, 1881 cclx
Deaths from sun-stroke and congestion of the brain in New Orleans during a series of years cclxii

PAGE.

Relations of malarial and yellow fevers to climate cclxvi
Monthly deaths by yellow fever, during a period of thirty-two years cclxvi
Fever statistics of the Charity Hospital of New Orleans—tables showing the annual and monthly admissions of the different fevers cclxviii
Deaths from malarial fevers, by months—1869-1880 cclxxi
Statistics of yellow fever in the Charity Hospital, during a period of fifty-seven years cclxxii
Statistics of the Charity Hospital of New Orleans cclxxiv
Practical observations on yellow fever in New Orleans cclxxv
Relations of fevers to drainage cclxxxi
Sanitary measures recommended by the President of the Board of Health cclxxxi
Cleanliness and drainage of paramount importance to the city of New Orleans cclxxxii
Drainage canals of New Orleans cclxxxiii
Difficulty of establishing a correct system of drainage in the area occupied by the city of New Orleans cclxxxv
Cases and deaths of the various fevers treated in the Charity Hospital, during a period of thirty-four years cclxxxvi
Deaths from the various forms of fever in the city of New Orleans, during a period of thirty-four years cclxxxvii
Report on proposed system of drainage for the first drainage district, New Orleans, by Major G. T. Beauregard, Chief Engineer, New Orleans, December 26, 1858 cclxxxix
Vital statistics of New Orleans cclxcvi
Table illustrating the relations of the population of New Orleans to the total mortality from all causes, during a period of ninety-four years, cccvi
Table illustrating the death rate from all causes, and from yellow fever, in New Orleans, during a period of sixty-four years cccvi
Population and mortality of New Orleans, during four years, 1880-1883 .. cccvii
Vital and mortuary statistics of New Orleans, monthly mortality, 1849-1881 cccviii
Nationalities of the dead in New Orleans, 1853-1881 cccix
Deaths from zymotic and epidemic and endemic diseases in New Orleans, 1844-1881 ccc
Deaths from phthisis pulmonalis, 1869-1880 ccciii
Deaths from diarrhœal diseases, 1867-1880 ccciii
Deaths from infantile diseases, during a period of twenty-seven years, 1867-1880 ccciv
Malignant, or Asiatic cholera cccv
Scarlatina, measles, whooping-cough and diphtheria cccvii
Venereal diseases—syphilis, gonorrhœa and orchitis cccvii
Typhus or ship-fever, typhoid or enteric fever cccix
Prisons, police stations and charitable institutions, as sources of disease, cccxi
Statistics of the parish prison of New Orleans cccxii
Sick destitute poor of New Orleans cccxiv
Vital statistics of New Orleans—comparative mortality of white and colored races cccxviii
Deaths at the different periods of life cccxxi
Mortality amongst the sexes in New Orleans, 1849-1881 cccxxii
Preventable causes of disease and death cccxxvii
Intra-mural sepulchre in New Orleans—effects of the mode and place of burial on the health of the inhabitants cccxxvii
Interments in the various cemeteries of New Orleans—total deaths, and deaths from contagious and infectious diseases, 1833-1883 cccxxxii
Poison, suicide, violence, murder, accident, drowning, stabbing, intemperance and insanity cccxxxvi
Inspection of drugs, milk, articles of food, etc cccxxxvii
Difficulty of controling the sale of poisons cccxxxviii
Irritant poisons cccxxxviii
Narcotic, or cerebral poisons cccxxixx
Spinal poisons cccxxxix
Cerebro-spinal poisons cccxxxix
Gaseous poisons cccxxxix
Lightning, cold, heat, starvation and drowning cccxxxix
Copper vessels and copper, in articles of food cccxl
Lead, and its compounds cccxlii

	Page.
Actual number of cases of poisoning, accidental or intentional, in New Orleans	cccxlv
Poison statistics of Charity Hospital, 1842-1880	cccxlv
Deaths from poison, suicide, murder and accidents, in New Orleans, 1849-1880	cccxlviii
Process for the recovery of drowned persons	cccxlvii
Poisonous effects of alcohol	cccxlviii
Food resources of Louisiana	cccl
Purity of the sugar and molasses of Louisiana	cccli
Cotton seed oil	ccclviii
Nutritive and agricultural value of decorticated cotton seed cake and meal	ccclxi
Chemical examination of Louisiana rock salt	ccclxiii
Abundant supplies of fruit, game and fish in Louisiana	ccclxvii
Effects of overflows upon the health of the inhabitants of the delta of the Mississippi river	ccclxix
Overflow of the city of New Orleans	ccclxix
Amount of the sediment in the water of the Mississippi river	ccclxxi
Early investigations on the sediment of the Mississippi river	cclxxii
Previous to the erection of levees, the delta of the Mississippi was annually overflowed	coclxxvi
Floods of the Mississippi	ccclxxviii
Relation of overflows to disease and death	ccclxxix
Water supply of New Orleans	ccclxxxii

Outline of the history, theory and practice of Quarantine	1
Relations of Quarantine to Constitutional and International Law and Commerce	1
The theory and practice of Quarantine, and its relations to Constitutional and International Law and Commerce	1
The English Colonies of America adopted Quarantine regulations long before their separation from the Mother Country and the achievement of their independence	2
South Carolina, history of Quarantine	2
Massachusetts, history of Quarantine	3
Rhode Island, Quarantine laws of	4
New York, history of Quarantine	7
All the essential questions relating to Quarantine, and the relations of the individual States to each other and the general Government, were thoroughly discussed shortly after the formation of the Federal Union of the Independent Colonies	9
On the organization of the Federal Government, in 1779, several of the seaboard States had Quarantine laws and regulations adopted by the Colonial Governments, and which had been in effect for nearly a century	9
History of Congressional legislation with reference to Quarantine	9
Discussion of the subject of Quarantine in the Fourth Congress of 1795	10
Bill passed by United States Congress, January 29, 1779, respecting Quarantine and Health laws	16
Congress clearly indicated, by the acts of 1796 and 1799, that Health and Quarantine laws were not in the nature of regulations of commerce, and did not violate the provisions of the Constitution, but were essentially, in their essence, police regulations, based upon the indestructible and inalienable right of self-preservation	18
Decision of Judge F. A. Monroe, in the case of Morgan's Louisiana and Texas Railroad and Steamship Company vs. The Board of Health	18
Quarantine established and recognized by International law	
Examples illustrating the forcible execution of Quarantine for protection against contagion	20
Quarantine facilitates commerce, in that it furnishes the only legal certificate which grants to vessels subject by International, National and State laws to quarantine, liberty to unload	21

PAGE.

The Quarantine system of Louisiana, in the principles involved, is essentially the same as the systems of France, Sardinia, Portugal, Turkey, Tuscany and other European powers 21
Commercial statistics of New Orleans, 1805 to 1860 22
Commercial statistics of New Orleans, 1862 to 1882 23
Important services rendered by detention, cleansing and fumigation in Quarantine 24
Services rendered to commerce by the removal of the sick from the vessels and their treatment in the Quarantine hospitals 25
History of the erection of the Mississippi Quarantine Station 25
General conclusions relating to the theory and practice of Quarantine, and its relations to constitutional law and to commerce 27
Contagious and infectious diseases, measures for their prevention and arrest 35
Definition of terms contagion and contagious diseases 37
Classification of contagia 38
Metabolic contagion 38
Conditions which favor the spread of contagious diseases 39
Measures for the prevention and arrest of contagious diseases 40
Yellow fever 41
Destructive effects occasioned by yellow fever and the more fatal diseases in New Orleans 41
Total number of cases and deaths of the various forms of fever treated in the Charity Hospital in New Orleans, during a period of thirty-four years (1844 to 1880) 41
Deaths from the various forms of fever in New Orleans during a period of thirty-four years (1844 to 1880) 42
Measures for the exclusion, prevention and arrest of yellow fever 43
General outline of the symptoms and pathology of yellow and malarial fevers 44
Yellow fever, symptoms and pathology 44
Malarial fever, symptoms and pathology 44
General conclusions as to the nature of yellow fever, as drawn from original investigations 45
Changes of the blood in yellow fever 45
Various forms of malarial fever 45
Changes of the blood in malarial fever 48
Chemical and microscopical examination of the blood in malarial fever 50
Microscopical examination of blood in yellow fever 51
Organized bodies in the blood of yellow fever 51
Examination of the organic forms in the yellow fever (atmospheric) during the epidemic of 1878 52
Changes of temperature and pulse in yellow fever 52
Nature of the febrile stage of yellow fever 53
Changes of the circulation, respiration and temperature in yellow fever 53
Hemorrhages in yellow fever 54
Chemical and microscopical characters of the black vomit of yellow fever 55
Changes of the urine in malarial fever 55
Chemical changes of the blood in yellow fever 58
Comparison between malarial, hæmaturia and yellow fever 58
Causes of black vomit in yellow fever 58
Changes of the urine in yellow fever 60
Tabular view of the pathological anatomy of yellow and malarial fever 65
Yellow fever, exterior 65
Malarial fever, exterior 65
Yellow fever, cerebro spinal and sympathetic systems 65
Malarial fever, cerebro spinal and sympathetic nervous systems 65
Yellow fever, pathological changes of the heart, acute fatty degeneration of 67
Malarial fever, heart 67
Yellow fever, lungs 70
Malarial fever, lungs 70
Yellow fever, stomach 70
Malarial fever, stomach 70
Yellow fever, intestines 71
Malarial fever, intestines 71
Yellow fever, pathological changes of the liver 72
Malarial fever, microscopic and chemical character of liver 72
Fatty liver of yellow fever 73
Pigment liver of malarial fever 73
Yellow fever, gall bladder 74
Yellow fever, supra-renal capsules 75

PAGE.

Malarial fever, supra-renal capsules 75
Yellow fever, pathological changes of kidneys 75
Malarial fever, kidneys 75
Pathological condition of kidneys in yellow fever 76
Pathological changes of kidneys in malarial hæmaturia 75
Constitution of the atmosphere during yellow fever epidemic of 1878 82
Results of the microscopical examinations of the air of rooms in which yellow fever cases were confined, during the epidemic of 1878 82
Origin of hospital grangrene, erysipelas and puerperal fever 85
Agency of the organisms observed in the atmosphere of yellow fever, and in the blood and black vomit 87
Practical application of the results obtained from the experiments illustrating the nature of the air in yellow fever, and the poisonous properties of black vomit and putrid blood 87
Quarantine and sanitation of ships 88
Rules and regulations of the Board of Health of the State of Louisiana for the government of Quarantine officers and stations, and for the enforcement of the acts of the legislature of Louisiana 89
Sanitary rules regulating shipping in the port of New Orleans 94
Prevention and arrest of yellow fever in the cities and towns of the Valley of the Mississippi, and more especially in the city of New Orleans 95
Small-pox 96
History of small-pox in Louisiana 96
Small-pox of comparatively rare occurrence in New Orleans, from 1803 to 1861 97
Deaths from small-pox in New Orleans, 1844 to 1883 98
Population of States tributary to New Orleans 99
The colored population of the States tributary to New Orleans constitues more than one-third of the entire population 99
Difficulty of eradicating small-pox in New Orleans 99
Population of the principal cities of the United States, classified according to race 100
Prevalence of small-pox in the Mississippi valley 101
Plan for the eradication of small-pox 101
Relations of small-pox in New Orleans to temperature and seasons 103
Deaths in New Orleans from small-pox during a period of sixteen years 103
Cases and deaths from small-pox in New Orleans in 1882, classified according to districts and race 103
Measures for the preservation of the public safety 104
Measures for the arrest and prevention of small-pox in Louisiana 105
Natural history of small-pox—facts essential to the sanitarian 108
Definition of small-pox 108
Small-pox, ætiology 108
Varieties of small-pox 108
Small-pox, prognosis 109
Vaccination 110
Phenomena of vaccinations 110
Re-vaccination 111
Performance of vaccination 111
Selection of lymph 111
Methods of collecting lymph 112
Free vaccination 113
Investigation as to the results accomplished by vaccination in the city of New Orleans during the first twenty-three weeks of 1883 113
General results of the inspection of twenty-six asylums, houses of refuge, educational institutions, and the parish prison of the city of New Orleans, in the month of June, 1883, establishing the healthy condition of the inmates, and the total absence of small-pox, on account of thorough and successful vaccination by experienced physicians 116
Results of inspection of public schools in New Orleans, 1883 121
General conclusions as to the results accomplished by vaccination in New Orleans 124
Sanitary measures for the arrest of small-pox 125
Conduct of the sick-room in cases of small-pox 126
Disposition of the dead of small-pox 127
Disinfection of dwellings and premises after recovery or death from small-pox 127
Disinfection and disinfectants 127
Diphtheria 128
History of diphtheria in New Orleans 128

PAGE.

Diphtheria—natural course 129
Diphtheria—incubation 129
Contagious nature of diphtheria 129
Rules governing families afflicted with diptheria 130
Scarlet fever 131
Mortality occasioned by scarlet fever in New Orleans 131
Facts of interest in the natural history of scarlet fever for the guidance of sanitary officers 131
Contagious and infectious diseases, measures for their prevention and arrest, by Joseph Jones, M. D 135
Vaccination—Variolæ Vaccinæ (cow-pox); variola and varioloid; accidents attending vaccination; spurious vaccination 135
Circular No. 2—Prepared for the guidance of quarantine officers and sanitary inspectors of the Board of Health of Louisiana, by Joseph Jones, M. D 135
Compulsory vaccination 136
Ordinance relative to compulsory vaccination 136
Extract from the proceedings of the meeting of the Board of Health, State of Louisiana, September 6, 1883, relative to small-pox and vaccination 137
Mortality from small-pox during the first months of 1883, in New Orleans, La .. 138
Letter of president of the Board of Health to mayor of New Orleans 140
Causes of the popular opposition to vaccination 141
Works of Edward Jenner 142
An inquiry into the causes and effects of the variolæ vaccinæ a disease, discovered in some of the western counties of England, particularly in Gloucestershire, and known by the name of the cow pox; by Edward Jenner, M. D. F. R. S. Third edition, London, 1801 143-159
Further observation on the variolæ vaccinæ, by Edward Jenner 161-177
A continuation of facts and observations relative to the variolæ vaccinæ or cow-pox, by Edward Jenner, M. D., F. R. S., etc., London, 1801 179-188
Dr. Jenner's account of the origin of the vaccine inoculation 189-191
Dr. Jenner's instruction for vaccine inoculation 191-193
An inquiry concerning the history of the cow-pox, principally with a view to supersede and extinguish the small-pox, by George Pearson, M. D., F. R. S., physician to St. George's Hospital, of the College of Physicians, London, 1798 195-222
Reports of a series of inoculations for the variolæ vaccinæ, or cow-pox; remarks and observations on this disease considered as a substitute for the small-pox, by William Woodville, M. D., physician to the Small-pox and Inoculation Hospitals, London, 1799 223-250
The errors of Drs. Woodville and Pearson arose from the performance of cow-pox innoculation in an atmosphere poisoned by the contagious emanations of small-pox. Correction of the errors of Dr. Woodville by Dr. Jenner 251
Experiments of Dr. Robert Willan in the years 1799 and 1800, on the combined innoculation of the variolous and vaccine fluids 252
References illustrating the extensive nature of the contributions by various observers to the literature of cow-pox inoculation, during the first five years after Jenner's announcement of his discovery 253
Report of the Royal College of Physicians of London on vaccination, with an appendix containing the opinions of the Royal College of Physicians of Edinburgh and Dublin; and of the Royal College of Surgeons of London, of Dublin, and of Edinburgh 255-262
The occurrence of small-pox after vaccination, excited in the minds of some, distrust as to the protective power of cow-pox inoculation 263
Dr. Jenner referred the reputed failures of vaccination to several causes 263-265
Epidemic small-pox of 1818 266
Hostility aroused against vaccination 267
Investigations of Dr. Alexander Monro on small-pox and vaccination 267-272
Mr. Brice's test 269
Opinion of the medical profession in 1818, as to the protective power of vaccination against small-pox 271
Dr. Thomson's theory of the identity of chicken-pox and modified small-pox 272
Establishment of re-vaccination 273
Professional views held in 1839 as to correct vaccination and impediments thereto 275
History of small-pox inoculation 277
Comparative advantages of the inoculated small-pox and of the cow-pox 278
Mortality occasioned by inoculated small-pox 282

PAGE.

The practice of inoculation for the small-pox, substituted a comparatively mild form of the disease, attended with but small mortality; but the total number of deaths by small-pox was thereby increased, and the perpetuation and spread of this loathsome pestilence on the surface of the earth was promoted by inoculation 282
The mortuary statistics of London demonstrated that inoculation actually increased the mortality from small-pox 284
The advantages of cow-pox inoculation demonstrated by official records and statistics 286
Mortuary records of London 287
Mortuary records of England 288–290
Mortality by small-pox in Copenhagen for a period of 100 years before vaccination and during vacination 291
Death rate from small-pox in various countries before and subsequent to vaccination 292
Outline of the introduction of cow-pox inoculation in various countries 296
History of cow-pox inoculation in England 296
History of cow-pox in Ireland 299
History of cow-pox in the Duchies of Schleswig and Holstien 300
Cow-pox in Germany 306
Cow-pox in France 307
Observations of Bosquet on the cow-pox discovered at Passy, near Paris, in 1836. 307
Comparison by Bosquet of the phenomena of the old and new vaccine 308
Discovery of cow-pox in America 310
Introduction of vaccination into the United States of America 312
Introduction of vaccination into the New England States, more especially into Boston, Massachusetts, by Dr. Waterhouse 312
Letter of Mr. Jefferson to Dr. Jenner 313
Lettter of John Quincy Adams to Dr. Jenner 314
Introduction of vaccination into the Southern States by Thomas Jefferson of Virginia 314
Correspondence between Thomas Jefferson and Dr. Benjamin Waterhouse, of Cambridge, Massachusetts, with reference to vaccination 316–322
Introduction of vaccination into New York, United States of America 323
Total Deaths from all causes, and from small-pox, measles, scarlet-fever and phthisis-pulmonalis in the city of New York during a period of fifty years, from 1804 to 1853 325
Introduction of vaccination into Philadelphia, Pennsylvania 326
Deaths from small-pox in Philadelphia from 1807 to 1882, inclusive 327
Mortuary statistics of Philadelphia 328
Small-pox and the introduction of vaccination in South Carolina 329
Deaths in Charleston, South Carolina, from all causes and from small-pox, 1822-1848, inclusive 334
Deaths in Charleston, South Carolina, from all causes and from small-pox, 1844-1865 335
Sanitary Statistics of South Carolina 335
Small-pox and vaccination in Georgia 338
Deaths from all causes and from small-pox in the white population of Savannah, Georgia,, during a period of fifty years, 1804-1853, inclusive 339
Total deaths from all causes and from small-pox in the white and colored population of Savannah, Georgia, during a period of sixteen years, 1854-1869 339
Deaths from fever and other causes in Savannah, Georgia 341
Small-pox and vaccination in Augusta, Georgia 343
Deaths from all causes and from small-pox, whites and blacks, in Augusta, Georgia, during forty-eight years, 1818-1866 343
Introduction of Vaccination into the Possessions of Spain in North and South America 344
The relations of grease in the horses' heels to cow-pox 348
Artificial production of horse-pox by inoculation 352
Artificial production of horse-pox by inoculation by injection of lymp 352
Character and course of horse-pox 353
General description of cow-pox 354
Observations on cow-pox, by Robert Ceely 355
Illustration of the appearance of cow-pox 355
General description of cow-pox 355
Comparative view of the natural small-pox, inoculated small-pox and cow-pox. 359
Small-pox contagion—nature of the virus of cow-pox and small-pox 360
Small-pox communicated to man and animals by eating the small-pox matter, in 1779 361

PAGE.

Microscopical characters of vaccine lymph and the contagious matter from the pustules of small-pox 363
Comparative phenomena of inoculated small-pox and cow-pox 365
Inoculated cow-pox vaccination 366
Phenomena of variola (small-pox) 367
Illustrations of confluent and distinct small-pox and of varioloid 368-370
Development and structure of the small-pox pustules 370
Changes of the temperature and urine in small-pox (variola), and in modified small-pox (varioloid) 372
Temperature in small-pox 373
Temperature in varioloid 375
Constituents of the urine in varioloid and variola 378
Spurious vaccination, or the abnormal phenomena accompanying and following vaccination 383
Causes of the various deviations of the vaccine disease from its normal course .. 383
In the early history of vaccination, protective powers against certain diseases were erroneously attributed to cow-pox inoculation 384
Spurious vaccination, or the abnormal phenomena accompanying and following vaccination, excited the attention of the medical profession of England in the earlier period in the history of vaccination 386
Attacks upon vaccination by Dr. Wm. Rowley, B. Moseley, and R. Squirrel (John Gale Jones) 386
Views of Dr. Jenner on the causes of the abnormal phenomena of vaccination .. 387
Researches upon spurious vaccination, or the abnormal phenomena accompanying and following vaccination in the Confederate army, during the recent American civil war, 1861-1865, by Joseph Jones, M. D 391
Section I—Preliminary observations—Accidents attending vaccination among the citizens and soldiers of the Confederate States—Necessity for the investigation—Method, extent and object of the inquiry—The injurious effects of vaccination referred to six causes—Circular letter addressed to the medical officers of the late Confederate army 391-395
Facts illustrating the value of vaccination, and the fatality of small-pox 393
Description of small-pox, by Sir Matthew Hale 394
Dr. Jenner pointed out some causes of the accidents attending vaccination, and gave rules for their avoidance 395
Section II—Modification, alteration and degeneration of the vaccine vesicle, dependent upon depressed and deranged forces, resulting from fatigue, exposure, and poor diet; and upon unhealthy, vitiated and scorbutic conditions of the blood of the patients vaccinated and yielding vaccine matter 396-419
In scorbutic patients, all injuries of the skin tend to form foul ulcers, of an unhealthy character 319
Effects of scurvy upon the character and progress of the vaccine vesicle 397
Investigations upon the effects of vaccination among the Federal prisoners confined in Camp Sumpter, Andersonville, Georgia 397
Examination of the charge urged by the United States Military Commission, that the Confederate Surgeons deliberately poisoned or destroyed the Federal prisoners at Andersonville, with poisonous vaccine matter 397–419
Dr. Hamilton, on spurious vaccination in the United States army 406
Dr. L. Guild, on the Medical Records of the Army of Northern Virginia 409
Reports on spurious vaccination in the Confederate Army, by S. E. Habersham, 410
Report of Dr. James Bolton, of Richmond, Virginia, on the accidents attending vaccination in the Army of Northern Virginia 413
Letter of Gen. R. E. Lee, with reference to Federal prisoners 416
Hon. Alexander H. Stephens on the condition of the Federal prisoners at Andersonville 417
Letters of Gen. J. E. Johnston, Gen. G. T. Beauregard, and W. Gilmore Simms, relative to Federal prisoners 417
Letters of Drs. Middleton Michael, Hunter McGuire, James Bolton and Thomas F. Wood, relative to "Researches on Spurious Vaccination in the Confederate Army," 418
Section III—The employment of matter of pustules which had deviated from the regular and normal course of development in the vaccine vesicle 420-441
Such deviation or imperfection in the vaccine disease and pustule, due mainly to previous vaccination; or, in other words, the employment of matter from patients who had been previously vaccinated, or who were affected with some skin disease at the time of the insertion of the vaccine virus 420
Prof. Paul F. Eve, M. D., on spurious vaccination 421
Dr. R. Hamilton, of Chattanooga, Tenn., on spurious vaccination among the Confederate forces serving in East Tennessee 422

PAGE.

Investigations of Dr. Edward Jenner on the varieties and modifications of the vaccine disease ... 423
Answer to Dr. Jenner's inquiries, by the Rector of Lackhamstead ... 423
Observations of Dr. James Davis, of Columbia, South Carolina, on the vaccine and varioloid disease ... 425
Examination of the doctrine of John Hunter on diseased actions as being incompatible with each other ... 427
Relations of the vaccine disease to measles and other diseases, with the observations of numerous authors ... 429-435
Relations of chicken-pox to small-pox ... 435
History and phenomena of chicken-pox (varicella) ... 435–441
Differential diagnosis between variola, varioloid and varicella ... 440
Section IV.—Dried vaccine lymph or scabs, in which decomposition has been excited by carrying the matter about the person for a length of time, and thus subjecting it to a warm, moist atmosphere ... 441–443
Section V. The mingling of the vaccine virus with that of the small-pox matter, taken from those who were vaccinated while they were laboring under the action of the poison of small-pox ... 443–449
Observations of Drs. Jenner, Woodville, Adams, Willan, George Hennen, Fowler and Bosquet upon the relations of the vaccine disease and small-pox ... 444–449
Section VI.—Dried vaccine lymph, or scabs, from patients who had suffered with erysipelas during the progress of the vaccine disease, or whose systems were in a depressed state from improper diet, bad ventilation, and the exhalations from typhoid fever, erysipelas, hospital gangrene, pyæmia, and offensive suppurating wounds ... 449–462
Dr. Wm. Gerdner, of Green county, Tennessee, on the relations of erysipelas to vaccination ... 450
Cases of erysipelas following revaccination, reported by Dr. Greene to the Boston Society for Medical Improvement ... 451
Cases of erysipelas following vaccination, reported to the Boston Society for Medical Improvement by Drs. J. B. S. Jackson, Cabot, Bigelow, Hemans, Putnam and Channing ... 452
Cases of constitutional irritation following vaccination, reported by Dr. Chas. E. Buckingham, of Boston, Massachusetts ... 452
Erysipelas following vaccination in the French army ... 453
Observations of various authors on erysipelas following vaccination ... 454
Dr. Paul F. Eve did not admit the possibility of the inoculation of erysipelas by vaccination ... 455
Facts illustrating the propagation of erysipelas by contagion ... 456
Testimony of Drs. Wells, Pitcairn, Stevenson, Gibson, Lawrence, George Gregory, Elliottson, Arnott, Thomas Watson, Rogers, Campbell de Morgan and others as to the contagious nature of erysipelas ... 457–458
Dr. J. C. Nott on erysipelas in the Confederate army ... 459
Report of Dr. J. F. Bell on the prevalence of erysipelas among the Confederate wounded in the Moore Hospital, Manassas Junction, Virginia, in the month of January, 1862 ... 460
Immunity of the army of General Jackson from erysipelas: report of Dr. Hunter McGuire, Medical Director Army of Valley of Virginia ... 461
Section VII.—Fresh and dried vaccine lymph and scabs from patients suffering with secondary or constitutional syphilis, at the time and during the progress of vaccination and the vaccine disease ... 463-542
Vaccine syphilis in the Confederate army ... 465
Testimony of Dr. L. D. Gilmore as to the syphilitic origin of a portion at least of the cases of spurious vaccination in the Confederate army ... 465
Report of Dr. James Bolton, on the relations of syphilis to vaccination in the Confederate army ... 466
Testimony of Drs. A. H. Powell, J. A. Ethridge, Hicks, Haigill and Rutherford, with reference to the causes of spurious vaccination in the Confederate army ... 470
Dr. Paul F. Eve held that syphilis might be communicated by vaccination ... 470
On vaccination and variolous disease, by Dr. O. Kratz ... 471
Dr. Wm. F. Fuqua testified as to the syphilitic origin of a portion at least of the cases of spurious vaccination in the Confederate army ... 472
On the communicability of syphilis by vaccination, by Wm. F. Fuqua, M. D., Appomatox county, Virginia ... 473
Abnormalities of vaccination, by Frank A. Ramsey, M. D. ...
Dr. Crawford, of Greenville, Tenn., traced the impure vaccine virus which produced indurated ulcers, and constitutional syphilis, to a single individual, and the disease thus disseminated by innoculation yielded to the remedies best adapted to the treatment of syphilis ... 476

PAGE.

Report on the communication of syphilis through the medium of vaccine virus among the inhabitants of Graniteville and vicinity in South Carolina, in 1866, by W. F. Percival, M. D., of Aiken, S. C. 477
Testimony of Dr. E. A. Flewellyn as to the dissemination of syphilis by vaccination in the Confederate army 479
Small-pox epidemic in Mobile, Alabama, during the winter of 1865-66, by Dr. J. C. Nott 480
Syphilitic vaccine and the means of preventing it 482
Testimony of Dr. Geo. H. Hubbard, of the United States Army, as to vaccino-syphilis 483
Opinion of Hebra, as to the question whether lymph from a true Jennerian vesicle has ever been a vehicle of syphilitic, scrofulous or other constitutional infection to the vaccinated person? 484
Replies of various surgeons and physicians as Acton, Addison, Alderson, Balfour, Barlow, Beatty, Bright, Brinton, Brodie, Burrows, Busk, Ceely, Clark, Crampton, Davis, Erichsen, Farr, Jenner, Jones, Latham, Locock. Marson, Noble, Tompkins, Travers, Watson, West, Williams, Wilson, Ackerly, Bennet, Fleming, Hutchinson, Laycock, Lever, Martin, Morley, Startin and Whitehead to the question propounded in 1856, by Mr. Simon, "Whether they had any reason to believe or suspect that lymph from a true Jennerian vesicle has been the vehicle of syphilitic infection 485-487
Inoculability of Tubercle 487
Experiments of M. Villermin, Lebert, Burdon, Sanderson, Koch and Formad on the nature and inoculability of Tubercle 487-494
Mortality occasioned in New Orleans and the Mississippi Valley by phthisis 486
Æteology of Phthisis 488
Possibility of transmitting scrofula by vaccination—views of Dr. Edward Ballard 493
Inoculability of cancer 494
Contagious nature of constitutional Syphilis 495
Testimony of Gaspard Torella in 1498 as to the contagious nature of constitutional syphilis 495
Facts published by William Clowes in 1637, illustrating the contagious nature of constitutional syphilis 495
Testimony of Gideon Harvey in his "Venus Unmasked," published in 1665, of Daniel Turner in 1717, and of John Hunter in 1776, as to the contagious nature of constitutional syphilis 496-498
Facts illustrating this subject, recorded by Drs. Duncan, William Watson, Clement Hamerton, Egan, Gavin, Price, Rizzi, Waller, Gilbert and others, 498-505
Experiments of Prof. Pelizzari, of Italy, demonstrating the possibility of inoculating healthy subjects with blood drawn from patients suffering with secondary or constitutional syphilis 502
Communication of syphilis by vaccination; post-vaccinal syphilis; vaccino-syphilitic inoculation 505
Cases of vaccino-syphilis recorded by Dr. Whitehead 507
Observations of M. Viennois on vaccino-syphilis 508
Communication of syphilis to forty-six children and twenty nurses, at Rivalta, Italy, by vaccination 509
Account of the tragedy of Rivalta, by Dr. Pacchiotti, of Turin 510
Genealogical scheme of the Rivalta series of vaccino-syphilitic inoculations 511
The Lupara series of vaccino-syphilitic inoculations 512
Genealogical scheme of vaccino-syphilitic inoculations, Lupara series 513
Bergame, or Terre de Busi, series of vaccino-syphilitic inoculations 514
Genealogical scheme of vaccino-syphilitic inoculations, Bergame series 515
Vaccino-syphilitic inoculations, Auray series 515
Genealogical scheme of vaccino-syphilitic inoculations, Auray series 517
Cases of vaccino-syphilis recorded by Dr. Jonathan Hutchinson 518-529
Modified, or lacto-variolus inoculation 530
Variolation of the cow 533
Animal vaccination 535
Precautions for the prevention of accidents in vaccination, and more especially for the exclusion of the syphilitic virus 539

ENDEMIC, EPIDEMIC, CONTAGIOUS AND INFECTIOUS DISEASES—MEASURES FOR THEIR PREVENTION AND ARREST—THEORY AND PRACTICE OF QUARANTINE—RELATIONS OF CLIMATE, SOIL AND WATERS TO DISEASES—APPLICATION OF MEASURES FOR THE EXCLUSION AND ARREST OF CONTAGIOUS AND INFECTIOUS DISEASES.

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INDEX.

A

	PAGE.
Accidents in vaccination—Precautions for the prevention, and more especially for the exclusion of the syphilitic virus	539
Accounts of the tragedy of Rivalta, Italy, by Dr. Pacchiotti, of Turin	510
Ackerley, of Liverpool, on vaccino-syphilis	484
Acts establishing Quarantine in New Orleans and Louisiana, 1846, cxlix; 1847, cl; 1855, cli; 1882, cxvi	
Acts relative to Quarantine passed by United States Congress, 1799	15
Acton, on vaccino-syphilis	485
Adams, John, President of United States, views of, with reference to exclusion of yellow fever,	15
Adams, John Quincy, letter of, to Dr. Edward Jenner, with reference to vaccination	314
Adams, Daniel W., M. D., Quarantine report by	xxxii
Adam, Dutch ship burnt by the Spaniards in 1748	20
Air, in yellow fever epidemic of 1878	82
Results of the examination of the air of rooms containing patients sick with yellow fever, 1878—Experiments upon living animals with the water through which the yellow fever air of 1878 in New Orleans had been passed	83
Practical application of the results obtained from the experiments of 1878, illustrating the nature of the air of yellow fever, and the poisonous properties of black vomit and putrid blood	
Ætiology of Phthisis	87
Addington: Comparative view of the natural small-pox, inoculated small-pox, and cow-pox, by Dr. John Addington	488
Adams, Joseph, M. D., on morbid poisons	359
On the relations of the vaccine and variolus poisons	429
Alcohol, poisonous effects of	445
Adelasio, Dr., on vaccino-syphilis—Bergame, or Terre de Busi series	cccxlviii
Andrews, C. C., United States Consul, Rio de Janeiro, report of deaths from yellow fever, from 1850 to 1883	514
Ages, mortality at different, in New Orleans, Louisiana	cix
Addison, on vaccino-syphilis	cccxxiii
Algid fever, pathology and symptoms of	485
Arnott, Professor, on the contagious nature of erysipelas	46
Apoplexy—observations on the elevated temperature, and sun-stroke or heat apoplexy, of June, 1881	458
America, discovery of cow-pox in	ccl
Introduction of vaccination into	310
America, North and South, introduction of vaccination into the possessions of Spain in	312
Andersonville, Georgia: Investigation of the effects of vaccination amongst the Federal prisoners confined in Camp Sumpter, Andersonville, Georgia	344
Andersonville, Georgia: Examination of the charge urged by the United States Military Commission, that the Confederate Surgeons deliberately poisoned and destroyed the Federal prisoners at Andersonville, with poisonous vaccine matter	397
Animal vaccination	397–419
Animals, communication of small-pox to	535
Anson, Lord, scurvy amongst his seamen	361
Arabians, origin of small-pox amongst	401
Archer, John, M. D., of Maryland, on the cure of whooping-cough by vaccination	277
	335

PAGE

Army, Confederate, spurious vaccination in ... 391–539
Erysipelas, vaccino-syphilis, and spurious vaccination in ... 450–479
Asiatic cholera ... cccv
Atchafalaya Quarantine Station, La, report of Quarantine operations at, 1880-83 ... xxxiii. xl, lxxxiii. cvi, clv
Atmosphere, its condition in yellow fever of 1878 ... 82
Relations to hospital gangrene, erysipelas and puerperal fever ... 85
Agency of the organisms observed in the atmosphere of yellow fever, and in the blood and black vomit ... 87
Augusta, Georgia, deaths from small-pox in, 1818–1866 ... 343
Auray series of vaccino-syphilis ... 515
Genealogical scheme of vaccino-syphilitic inoculations ... 517
Avicenna, on small-pox ... 278

B

Bacillus anthracis, in black vomit of yellow fever ... 51
Bacterium termo, in black vomit of yellow fever ... 51
Badcock, on the variolization of the cow, or the production of vaccina by inoculation of the cow with the lymph of human variola ... 534
Ballard, Edward, M. D., on vaccination ... 455
On the relation of scrofula to vaccination ... 493
Balfour, Barlow, Beatty, Bright, Brinton, Sir Benjamin Brodie, Dr. George Burrows and George Burke on vaccino-syphilis ... 485
Bacteria in blood and black vomit of yellow fever ... 50–87
Bayley, R. A., M. D., Sanitary Inspector Board of Health, State of Louisiana, reports of ... 17 *et seq*
Beauregard, G T., General, letter of, to Joseph Jones, M. D., with reference to Federal prisoners ... 417
Report of, on proposed system of drainage for first drainage district of New Orleans, by Major G. T. Beauregard, Chief Engineer, December 26, 1858 ... cclxxxix
Bateman, Dr., on chicken-pox ... 439
Baron, John, M. D., Life of Edward Jenner ... 364
On horse pock, 349 (sends equine matter to Dr. Jenner) ... 350
Ballie, on contagious nature of erysipelas ... 456
Beale, Lionel, of London, on microscopical characters of the small-pox poison ... 363
Bell, J. F., M. D., Surgeon C. S. A., on the prevalence of erysipelas among the Confederate wounded in the Moore Hospital, Manassas Junction, Va., January, 1862 ... 460
Bergame, or Terre de Busi, series of vaccino-syphilitic inoculations—genealogical statement ... 414–415
Berna, bark, infected with yellow fever ... xc
Beret, A. M., M. D., Sanitary Inspector Fifth District, New Orleans, report of ... xiii
Bennet, John Hughes, M. D., of Edinburg, on chicken-pox ... 438
Bigelow, Dr., of Boston, on erysipelas following vaccination ... 451
Bile in yellow and malarial fevers ... 74
Blair, M. D., on cow-pox ... 254
Black, W., M. D., on small-pox ... 283
Blane, Sir Gilbert, on diseases of seamen ... 403
Bladder, urinary in yellow and malaria fever ... 81
Bladder, gall in yellow and malarial fever ... 74
Black pigment of malarial fever ... 49
Black vomit of yellow fever ... 47–87
Poisonous properties of ... 87
Bennet, J. R., M. D., on vaccino-syphilis ... 486
Blood, contagious nature of, in constitutional syphilis ... 502
Changes of, in yellow fever ... 46
Changes of, in malarial fever ... 48
Corpuscles, in yellow fever ... 47
Chemical and microscopical characters of, in malarial fever ... 50
Micro-organisms developed in, during the progress of yellow fever ... 51
Experiment on the putrefaction of, and the development of micro-organisms in, the blood of yellow fever ... 51
Organisms in blood of yellow fever ... 87
Putrid and black vomit, poisonous properties, practical application of the results obtained from the experiments illustrating the nature of the air in yellow fever and the poisonous properties of black vomit and putrid blood ... 87
Board of Health of the State of Louisiana—
Extract from minutes of September 6, 1883, relative to small-pox ... 137
Quarantine operations of ... xxiii, xxxiv. xl. lii
Minutes of special meeting, June 27, 1882, with reference to case of yellow fever, Henry Forbes ... lv, lx
Proceedings, August 17, 1882 ... lxxii
Proceedings, July 13, 1882 ... lxxvii
Proceedings, July 17, 1882 ... lxxviii
Proceedings, July 27, 1882 ... lxxix
Quarantine operations ... lxxxiv
Rules and regulations governing Quarantine and Sanitary officers ... 89
Additional Quarantine proclamation of ... xci
Extracts from proceedings of July 19, 1883, relative to Quarantine and New Orleans Auxiliary Sanitary Association ... xciii
Adopts resolution of Hon. I. N. Marks requesting the Governor of Louisiana to issue a proclamation declaring non-intercourse with places infected with yellow fever ... xcv
Resolutions requesting withdrawal of Governor's non-intercourse proclamation ... ci
Action of, with reference to United States Marine Hospital Service and Ship Island ...
Act proposed by, for the establishment of floating hospital, or ward, in the harbor of New Orleans ... cxi
Bolton, James, M. D., of Richmond, Va., on the accidents attending vaccination in the army of Northern Virginia ... 41
On the relations of syphilis to vaccination in the Confederate army ... 46

PAGE.

Booth, Edward. Hon., resolutions of, relative to small-pox in New Orleans..... xvii
Views of, on Quarantine..... lx
Resolutions of, with reference to epidemic fund..... lxxiii
Resolutions of, to National Board of Health..... lxxviii, lxxxiv
Bosquet, observations on the cow-pox, discovered at Passy, near Paris, in 1836..... 307
Comparison of the phenomena of the old and new vaccine..... 308
Boston, Massachusetts, inoculation for small-pox in, 1722..... 28
Society for Medical Improvement, report of..... 451
Bosworth, S. W., Col., member of Board of Health of the State of Louisiana, remarks on Quarantine..... lx
Bourne, Hon., of Rhode Island, debate on Quarantine..... 11
Bracquet, of Lyons, on lacto-variolous inoculation..... 530
Boylston, Z., M. D., first practiced inoculation for the small-pox in Boston, Mass., 1721..... 281
Brent, Hon., of Virginia, on Quarantine..... 13
Brenton, Edward Pelham, Captain, on battle of New Orleans..... cxlii
British Consul, A. de G. de Fonblanque, protest of, against action of Board of Health in returning steamship Marco Aurelio to Mississippi Quarantine Station..... lxi
Buckingham, Charles E., M. D., on erysipelas and vaccination..... 452
Buchanan on vaccination..... 455
Bryce, tests for scientific vaccination..... 269
Budd, George, M. D., of London, on the dissemination of cancer..... 494
Burial, mode of, in New Orleans, La..... cccxxvii
Intra-mural, effects of, on public health..... cccxxix

C

Cabot, Dr., of Boston, on erysipelas following vaccination..... 451
Carro De, M. D., letter to Dr. Jenner..... 351
Cancer, inocculability of..... 494
Ceely, Robert, observation on cow-pox, with general description..... 455
On variolation of the cow..... 534
On vaccino-syphilis..... 485
Cemeteries of New Orleans..... cccxxvii
Cases and deaths from small-pox in New Orleans, 1882–1883..... v, viii, *et seq*
Carson, W. H., M. D., Quarantine Physician Rigolets Station, reports of, 1881 and 1882..... xxxviii, lxxv, lxxxii, cxciii, lcvii
Carrington, P. S., M. D..... clxiv
Cerebro spinal, nervous system, pathology of, in yellow and malarial fevers..... 65
Canals, drainage of New Orleans, filthy condition of..... cclxxxiii
Dimensions of..... cclxxxiii
Clark, Sir James, on vaccino-syphilis..... 485
Cerioli, of Lucca, on vaccino-syphilis..... 507
Chambon, on animal vaccination..... 536
Chauveau, on the nature of the small-pox poison..... 363
Classification of contagia..... 38
Clinical report of the case of Louis Deschler..... lxiii
Champlin, A. Parker, M. D., President of Hancock County (Miss.) Board of Health—Co-operation of, with Louisiana Board of Health..... lxxxv
Claiborne, Governor of Louisiana, on yellow fever..... cxl
Charity Hospital of New Orleans..... cxxxix, ccxlvi
Fever statistics of..... cclxviii, cclxxiii
Statistics of..... cclxxiv
Children, diarrhœal diseases of..... cccciii
Relation of milk and its adulteration to the diarrhœal diseases of children..... cccciii
Cerebral and cerebro spinal poisons..... cccxxxix
Charitable institutions of New Orleans..... cccxi
Chamber of Commerce of New Orleans—resolutions of, with reference to Quarantine..... clxi
Choppin, Samuel, M. D., President Louisiana Board of Health, on Quarantine..... cxxiii, clxii
Chapman, on cow-pox..... 254
Chipman, N. P., Judge Advocate U. S., in trial of Henry Wirz, of Andersonville..... 395
Cholera infantum, deaths from, in New Orleans during a period of 27 years (1847 to 1880)..... cccix
Climate—Observations on the climate and health of Louisiana, and more especially upon the relations of the climate of New Orleans to endemic and epidemic diseases..... cclxiv
Climate and health of Louisiana..... ccxlvi
Commercial statistics of New Orleans..... 23
Colonies, American, history of Quarantine in..... 2
Contagia, metaholic..... 38
Contagious and infectious diseases, measures for their prevention and arrest, by Joseph Jones, M. D..... ii, ccc–2–542
Contagion and contagions, definition of terms..... 37
Contagious diseases, conditions which favor their spread..... 37
Congress of the United States, annals of, relative to Quarantine in 1796..... 10
Consumption (phthisis pulmonalis)..... ccc
Convulsions, deaths from, in New Orleans..... cccix
Convulsions, infantile, deaths from, in New Orleans..... cccix
Coroner, inquests of, in New Orleans..... cccxvi
Court, Supreme, of Louisiana, decision of sustaining the Quarantine laws of Louisiana and the acts of the Board of Health of the State of Louisiana..... clxix
Cohn, Ferdinand, M. D., on the nature of the small-pox poison..... 539
Copenhagen, mortality by small-pox during a period of 100 years, before vaccination and during vaccination..... 291
Circular No. 1—Prepared for the guidance of the Quarantine and Sanitary officers of Louisiana, by Joseph Jones, M. D..... 135–542
Circular No. 2—Prepared for the guidance of the Quarantine and Sanitary officers of Louisiana, by Joseph Jones, M. D..... 280
Constantinople, inoculation for small-pox in..... 280
Circassia and Georgia, inoculation for small-pox in..... 280

PAGE.

Compulsory vaccination 136
Ordinance relative to compulsory vaccination 136
Chinese method of inoculation for the small-pox 287
Channing, Dr., of Boston, on erysipelas following vaccination 452
Chicken-pox—Dr. Thompson's theory of its identity with varioloid 272
(Varicella) relation to small-pox, history and phenomena 435–441
Differential diagnosis between variola varioloid and varicella 440
Chauveau on the artificial production of horse-pox by inoculation 352
Confederate States of America, researches upon spurious vaccination, or the abnormal phenomena accompanying and following vaccination in the Confederate army during the American civil war (1861 to 1865), by Joseph Jones, M. D 391
Confederate Army—
Dr. Gardner, on the occurrence of erysipelas after vaccination 450
Dr. Paul F. Eve, on erysipelas 470
J. C. Nott, M. D., on erysipelas 459
Prevalence of erysipelas among wounded at Moore Hospital, Virginia, Jan., 1862 460
Immunity of the army of Gen. Jackson from erysipelas, report of Dr. Hunter McGuire, Medical Director Army of Virginia 461
Vaccino-syphilis in 465
Reports of Dr. T. O. Gilmore on syphilis following vaccination in 465
Dr. James Bolton, on the relations of syphilis to vaccination in 466
Spurious vaccination in, testimony of Drs. Powell, Etheridge, Hicks, Hazgill and Rutherford 469
O. Kratz, M. D., on vaccination in 470
Dr. Wm. F. Fuqua, on syphilitic origin of spurious vaccination in 478
Drs. Ramsey, Crawford and Flewellen, on spurious vaccination and vaccino-syphilis in 473–479
Confluent small-pox 368–370
Colored race, vital statistics of, in hospitals of New Orleans cccxviii
Clewes, William, on the contagious nature of constitutional syphilis 495
Constitutional Syphilis—
Contagious nature 495
Testimony of Guespard Torella, in 1498, as to the contagious nature of 495
Contagious nature, illustrated by William Clows, in 1637 495
Gideon Harvey, 1665; Daniel Turner, 1717; John Hunter, 1776; Drs. Duncan, Wm. Watson, Clement Hamerton, Egan, Gavi, Price Rizzi, Waller Gilbert and others, on 496–505
Constitutional Syphilis: Experiments of Pellizari, of Italy, demonstrating the possibility of inoculating healthy subjects with blood drawn from patients suffering with secondary or constitutional syphilis 502
Cow-pox—
Literature of 253–255
Vaccination—variolæ vaccinæ (cow-pox); variola and varioloid; accidents attending vaccination; spurious vaccination 135
Circular No. 2—Prepared for the guidance of the Quarantine Officers and Sanitary Inspectors of the Board of Health of Louisiana, by Joseph Jones, M. D 135
Compulsory vaccination 136
Ordinance relative to compulsory vaccination 136
Extract from the proceedings of the meetings of the Board of Health, State of Louisiana, September 6, 1883, relative to small-pox and vaccination 137
Mortality from small-pox during the first eight months of 1883, in New Orleans 138
Letter of President of Board of Health to Mayor of New Orleans 140
Causes of the popular opposition to vaccination 141
Works of Edward Jenner 142
An inquiry into the causes and effects of the variolæ vaccinæ, a disease discovered in some of the western counties of England, particularly Gloucestershire, and known by the name of the "Cow-pox," by Edward Jenner, M. D., F. R. S. Third edition. London: 1801 143–159
Further observations on the variolæ vaccinæ, by Edward Jenner 161–179
A continuation of facts and observations relative to the variolæ vaccinæ or cow-pox, by Edward Jenner, M. D., F. R. S., etc, London. 1801 179–188
Dr. Jenner's account of the origin of the vaccine inoculation 189–191
Dr. Jenner's instructions for vaccine inoculation 191–193
An inquiry concerning the history of the cow-pox, principally with a view to supersede and extinguish the small-pox, by George Pearson, M. D., F. R. S., Physician to St. George's Hospital, of the College of Physicians, London. 1798 195–222
Reports of a series of inoculations for the variolæ vaccinæ, or cow-pox—Remarks and observations on this disease, considered as a substitute for the small-pox, by William Woodville, M. D., physician to the Small-pox and Inoculation Hospitals, London. 1799 223–250
The errors of Drs. Woodville and Pearson arose from the performance of cow-pox inoculation in an atmosphere poisoned by the contagious emanations of small-pox—Correction of the errors of Dr. Woodville, by Dr. Jenner 231
Experiments of Dr. Robert Willan in the years 1799 and 1800, on the combined inoculation of the variolus and vaccine fluids 252
References illustrating the extensive nature of the contributions by various observers to the literature of cow-pox inoculation, during the first five years after Jenner's announcement of his discovery 253
Report of the Royal College of Physicians of London on Vaccination, with an appendix containing the opinions of the Royal College of Physicians of Edinburgh and Dublin, and of the Royal College of Surgeons of London, of Dublin, and of Edinburgh 255–262
The occurrence of small-pox after vaccination, excited in the minds of some distrust as to the protective power of cow-pox inoculation 263
Dr. Jenner referred the reported failures of vaccination to several causes 263–265
Epidemic small-pox of 1818 265
Hostility aroused against vaccination 267

	Page.
Cow Pox—	
Investigations of Dr. Alexander Munro on small-pox and vaccination	267–272
Mr. Bryce's test	264
Opinion of the Medical Profession in 1818 as to the protective power of vaccination against small-pox	271
Dr. Thomson's theory of the identity of chicken-pox and modified small-pox	272
Establishment of re-vaccination	273
Professional views held in 1839, as to correct vaccination and impediments thereto	275
History of small-pox inoculation	277
Comparative advantages of the inoculated small-pox and of the cow-pox	278
Mortality occasioned by inoculated small-pox	282
The practice of inoculation for the small-pox, substituted a comparatively mild form of the disease, attended with but small mortality: but the total number of deaths by small-pox was thereby increased, and the perpetuation and spread of this loathsome pestilence on the surface of the earth was promoted by inoculation	282
The mortuary statistics of London demonstrated that inoculation actually increased the mortality from small-pox	284
The advantages of cow-pox inoculation demonstrated by official records and statistics	286
Outline of the introduction of cow-pox inoculation in various countries	296
History of cow-pox inoculation in England	296
History of cow-pox in Ireland	299
History of cow-pox in the Duchies of Schleswig and Holstein	300
Cow-pox in Germany	306
Cow-pox in France	307
Observations of Bosquet on the cow-pox discovered at Passy, near Paris, in 1836	307
Comparison by Bosquet of the phenomena of the old and new vaccine	308
Discovery of cow-pox in America	310
Introduction of vaccination into the United States of America	312
Introduction of vaccination into the New England States, more especially into Boston, Massachusetts, by Dr. Waterhouse	312
Letter of Mr. Jefferson to Dr. Jenner	313
Letter of John Quincy Adams to Dr. Jenner	314
Introduction of Vaccination into the Southern States by Thomas Jefferson, of Virginia	315
Correspondence between Thomas Jefferson and Dr. Benjamin Waterhouse, of Cambridge, Massachusetts, with reference to vaccination	316–322
Introduction of vaccination into New York, United States of America	323
Total deaths from all causes, and from small-pox, measles, scarlet fever and phthisis pulmonalis in the city of New York during a period of fifty years, from 1804 to 1853	325
Introduction of vaccination into Philadelphia, Pennsylvania	326
Deaths from small-pox in Philadelphia from 1807 to 1882, inclusive	327
Mortuary statistics of Philadelphia	328
Small-pox, and the introduction of vaccination in South Carolina	329
Deaths in Charleston, South Carolina, from all causes and from small-pox, 1822-1848, inclusive	334
Deaths in Charleston, South Carolina, from all causes, and from small-pox, 1844-1865	335
Sanitary statistics of South Carolina	335
Small-pox and vaccination in Georgia	338
Deaths from all causes and from small-pox in the white population of Savannah, Georgia, during a period of fifty years, 1804–1853, inclusive	339
Total deaths from all causes and from small-pox in the white and colored population of Savannah, Georgia, during a period of sixteen years, 1854-1869	339
Deaths from fever and other causes in Savannah, Georgia	341
Small-pox and vaccination in Augusta, Georgia	343
Deaths from all causes and from small-pox, whites and blacks, in Augusta, Georgia, during forty-eight years, 1818-1866	343
Introduction of vaccination into the possessions of Spain in North and South America	344
The relations of grease in the horse's heel to cow-pox	348
Artificial production of horse-pox by inoculation	352
Artificial production of horse-pox by inoculation by injection of lymph	352
Character and course of horse-pox	353
General description of cow-pox	354
Observation on cow-pox, by Robert Ceely	355
Illustration of the appearance of cow-pox	355
General description of cow-pox	355
Comparative view of the natural small-pox, inoculated small-pox and cow-pox	359
Small-pox contagion—Nature of the virus of cow-pox and small-pox	360
Small-pox communicated to man and animals by eating small-pox matter, in 1779	361
Microscopical character of vaccine lymph and the contagious matter from the pustules of small-pox	363
Comparative phenomenon of inoculated small-pox and cow-pox	365
Inoculated cow-pox vaccination	366
Phenomena of variola (small-pox)	367
Crampton, Philip, Sir, on vaccino-syphilis	485
Cullen, on the contagious nature of erysipelas	455
Cruickshank, on measles and small-pox	430
Copper vessels and copper in articles of food—Effects of, upon human health	cccxl
Cyanide of potassium, poisonous properties of	cccxliii

D

Davis, James, M. D., of Columbia, S. C., on the vaccine and variolous diseases	425
Davis, Theodore, on vaccino-syphilis	485

PAGE.

Deaths, from all causes, and from small-pox, in New Orleans, 1880-83 xx
From small-pox, classified according to months and race, 1881-83 xxi
From small-pox, classified according to sex, 1880-81-82-83 xxii
From small-pox, in New Orleans, during 16 years 103
In Rio de Janerio, from yellow fever and all causes xxxvi
Preventable causes of ..... cccxxvii, lii
Death rate of New Orleans ccxcviii
Of New Orleans, 1849 to 1881 ccxxcviii
Debility, infantile ccciv
Diarhœa and diarrhœal diseases ccciii
Relations of milk and its adulterations to the diarrhœal diseases of children ccciii
De Roaldes, A. W., M. D., surgeon Charity Hospital, report of case of yellow fever, 1882 lvi
Deschler, Louis, taken sick at 1010 Tchoupitoulas street; died in Charity Hospital of New Orleans, July 17, 1882; clinical report of lxiii
Dr. Charles Schuppert on nature of disease lxiv
Orders of President of Louisiana Board of Health to sanitary inspector and officers of Fourth District, with reference to disinfection of 1010 Tchoupitoulas street lxiv
Reports of Sanitary Officer John Logan and Sanitary Inspector Dr. Mandeville as to nature of disease of Louis Deschler lxv
Delta of the Mississippi River ..... ccclxix, ccclxxxi
Disinfectants—Amount paid by the City of New Orleans for disinfectants, (1870 to 1881) xliv
Disinfection and disinfectants 126
Of infected ships from Rio de Janeiro, measures of disinfection instituted by Joseph Jones, M. D xxxv
Deaths from yellow fever in Rio de Janeiro xxxvi
Of dwellings and premises after recovery or deaths from small-pox 127
Of privies and water-closets 127
Of ships 89–91
Definition of terms relating to contagion and contagious diseases 37
Of yellow fever 44
Of malarial fever 44
Diphtheria, history of, in New Orleans 128
Nature and cause of 129
Incubation of 129
Contagious nature of 129
Rules governing families afflicted with 130
Development and structure of small-pox pustule 368–370
Distinct small-pox 368
Diseased actions—Doctrine of Dr. John Hunter, as being incompatible with each other 427
De Cantela Benarpo, M. D., on variations of the progress of the vaccine disease 388
Delgrade, Dr., on the simultaneous occurrence of measles and small-pox 431
Denby, on the period of the incubation of the small-pox poison 448
DePaul, on the contagious nature of constitutional syphilis, and on vaccino-syphilis 501–507–512–515
DeVergie, on contagious nature of constitutional syphilis 501
Dreux, on lacto-variolus inoculation 530
Dunning, Richard, on vaccination 254
Drainage—Relations of fevers to drainage, malarial fevers, yellow fever, diarrhœal diseases: measures recommended by the President of the Board of Health of the State of Louisiana cclxxxi
Report on proposed system of drainage for First Drainage District, New Orleans, by Major G. T. Beauregard, Chief Engineer of New Orleans, Dec. 20, 1858 cclxxxix

E

Eagan, Dr., on the contagious nature of constitutional syphilis 500
Eagan, J. C., Attorney General, State of Louisiana, letter of Dr. Joseph Jones, President of the Board of Health of the State of Louisiana, with reference to the cases of Morgan & Co. vs. Board of Health clxvii
Endemic, epidemic and contagious diseases—Measures for their prevention and arrest, by Joseph Jones, M. D ..... ii–ccc, 1–542
England, mortuary records of 288–290
History of cow-pox inoculation in 296
Edinburgh, report of Royal College of Physicians of, on vaccination 470
Elliotson, Dr., on contagious nature of erysipelas 458
Enteric, or typhoid fever cccix
English-Lookout, report of Dr. W. H. Carson, Quarantine Inspector at, 1883 cvii
Epidemic diseases, deaths from, in New Orleans ccc
Erickson, Mr., on vaccino-syphilis 485
Erysipelas—
Relations of, to vaccination 449–462
Dr. Wm. Gardener on 450
Cases of, following vaccination, reported by Dr. Green to the Boston Society for Medical Improvement 451
Cases reported by Drs. J. B. S. Jackson, Cabot, Bigelow, Hemans, Putnam, and Channing 452
Following vaccination in the French army 453
Dr. Paul F. Eve, on its relations to vaccination 455
Observations of various authors on erysipelas following vaccination 454
Facts illustrating the propagation by contagion 456
Contagious nature, testimony of Drs. Wells, Pitcairn, Stevenson, Gibson, Lawrence, George Gregory, Elliotson, Arnott, Thos Watson, Rogers, and others 457–458
Dr. J. C. Nott, on erysipelas in the Confederate army 459
Report of Dr. J. F. Bell on the prevalence of erysipelas among the Confederate wounded in the Moore Hospital, Manassas Junction, Virginia, in the month of January, 1862 460
Immunity of the army of Gen. Jackson from, report of Dr. Hunter McGuire, Medical Director of the Army of the Valley of Virginia 461

	PAGE.
Etheridge, J. A., Surgeon C. S. A., on spurious vaccination	469
Eve. Paul F., M. D., on spurious vaccination	421
Relations of erysipelas to vaccination	455
Held that syphilis might be communicated by vaccination	470
Excelsior, Swedish bark, occurrence of yellow fever on board in harbor of New Orleans, 1880—action of Board of Health in returning Excelsior to Mississippi Quarantine	xxx
Expenditures of the Board of Health of the State of Louisiana, 1869–1881	xliii, xlix
Exports, value of, at New Orleans	xxxiii
Exterior of body after death from yellow fever	65

F

Fair, Arthur, on vaccino-syphilis	485
Federal Prisoners—Investigation of the condition of diseases of the United States soldiers, confined in Camp Sumpter, Andersonville, Georgia, by Joseph Jones, M. D., Surgeon C. S. A	396-419
Food of, at Andersonville, Georgia	405
Illustration of hospital gangrene following local injuries among	407
Faget, C., Sanitary Inspector Second District, New Orleans, report of	x
Fever—Destructive effects occasioned by yellow fever and the more fatal diseases in New Orleans, Louisiana	41
Various forms of; total number of cases and deaths of the various forms of, treated in the Charity Hospital of New Orleans, during a period of thirty-four years, 1844 to 1880	41
Deaths from the various forms of, in New Orleans, during a period of thirty-four years, 1844 to 1880	42
Measures for the exclusion, prevention and arrest of yellow fever	43
General outline of the symptoms and pathology of yellow and malarial fevers	44
Symptoms and pathology of malarial fever	44
Total number of cases and deaths of the various forms of fever treated in the Charity Hospital during a period of thirty-four years	cclxxxvi
Deaths from the various forms of fever in New Orleans, during a period of thirty-four years	cclxxxvi
Monthly and annual rainfall, with deaths from yellow fever, in New Orleans, during a series of years	ccli
Fever, yellow, monthly deaths from yellow fever during a series of years	cclxvi
Intermittent fever, cases of, admitted into the Charity Hospital	cclxviii
Statistics of various fevers treated in the Charity Hospital	cclxviii
Malarial fever, deaths from	cclxxi
Yellow fever, statistics of, in Charity Hospital, 1822 to 1880	cclxxii
Yellow fever, practical observations on	cclxxv
Puerperal	85
Fatty degeneration of the heart in yellow fever and other diseases	68
Fat, its relations to certain pathological changes in yellow fever	69
Ferguson, Robert, on vaccino-syphilis	485
Fisher, John, M. D., of Boston, description of discrete confluent and inoculated small-pox	368–438
Flewellen, F. A., M. D., testimony of, as to the dissemination of syphilis by vaccination in the Confederate Army	479
Testimony as to condition of Federal prisoners at Andersonville, Georgia	479
Fenner, Associate Justice Supreme Court of Louisiana, delivers opinion of Supreme Court sustaining the action of the President of the Board of Health and the Quarantine laws of the State of Louisiana	clxix
Fleming, of Glasgow, on vaccino-syphilis	486
Fosbrooke, J. D., Rev., observations on Dr. Hooper's cases of cow-pox	253
Remarks on Dr. Pearson's communication	254
Financial operations of the Board of Health of the State of Louisiana, 1870 to 1881	xl
Receipts of the Board of Health, 1869 to 1881	xlii
Expenditures, 1869 to 1881	xliii
Expenditures for repairs of Mississippi Quarantine Station, for disinfections and publication of rules and regulations	cxlvii
Finney, J. F., resident physician Mississippi Quarantine Station, reports of	xxxi, xxxvii, lxxxi. xcix, civ
Floating ward, or hospital, for port of New Orleans	cxviii
Formento, Felix, M. D., member of Louisiana Board of Health, remarks relative to quarantine and sanitation	lx
Resolutions of, relating to co-operation with New Orleans Auxiliary Sanitary Association	xcii
Fonblanque, A. de G. de, British Consul, on Quarantine	lxi
Forbes, Henry—First case of yellow fever in 1882	lv
Measures adopted by Board of Health for arrest of yellow fever	98
Old Levee street in 1882	lvi
Orders issued by the President of the Board of Health for the disinfection of the premises occupied by Henry Forbes	lvii
Sanitary condition of steamship Marco Aurelio, which brought Forbes from Havana to New Orleans	lviii
Formad, H. D., M. D., of Philadelphia, on tuberculosis	491
Foul vessels	93
France, history of cow-pox in	307
French—French domination in Louisiana from 1684 to 1763, progress of commerce and population during	cxxxi
Fowler, Robert, M. D., on the simultaneous action of the vaccine and variolus poison	448
Frank, Dr., of Vienna, on chicken-pox	436
Fumigation, disinfection and purification of vessels from ports in which yellow fever usually prevails	91
Fungi, developed in black vomit of yellow fever	48

G

PAGE.

Gaseous poisons cccxliii
Gall bladder in yellow and malarial fevers 79
Gallatin, of Pennsylvania, on Quarantine 12
Gangrene, hospital 85
Hospital, in the Federal and Confederate armies, and among the Federal prisoners confined at Andersonville, Ga., with cases and drawings illustrating the disease, by Joseph Jones, M. D., Surgeon C. S. A. 405–406–407–408–409
Garner, on variolation of the cow 533
Gavin, Hector, Dr., on the contagious nature of constitutional syphilis 500
Germany, history of cow-pox in 306
Georgia, small-pox and vaccination in 338
Savannah, Ga., deaths from small-pox in 339
deaths from fevers in 341
Augusta, Ga., small-pox and vaccination in 343
Andersonville, Ga., effects of vaccination upon Federal prisoners confined at 397
Examination and refutation of the charge that the Confederate surgeons destroyed the Federal prisoners at Andersonville with poisonous vaccine matter 397–419
Gardner, Wm., M. D., of Greene county, Tennessee, on the relation of erysipelas to vaccination 451
Gilmore, L. D., M. D., testimony of, to the syphilitic origin of a portion of the cases of spurious vaccination in the Confederate army 465
Guild, L., M. D., on the medical records of the army of Northern Virginia during the American civil war 409
Giles, of Virginia, on Quarantine 11
Glenn, Col. John W., United States Superintendent of Public Buildings, statements of, with reference to the conduct of the Ship Island Quarantine c
Godfrey, John, Surgeon United States Marine Hospital Service, statement of relative to Ship Island Quarantine, as conducted by the United States Marine Hospital Service c
Gibson, Dr., on contagious nature of erysipelas 457
Goldson, of Portsea, attack on Dr. Jenner 265
Greene, Dr., of Boston, on erysipelas following vaccination 451
Greenhill, Dr., on vaccino-syphilis 485
Grease in the horse's heels, relations of, to cow-pox 348
Grease, or horse-pox, artificial production of, by inoculation 352
Character, symptoms and course 353
Gregory, George, M. D., on eruptive fevers and the contagious nature of erysipelas 457
Guild, L., M. D., Medical Director C. S. A., on spurious vaccination 409

H

Hæmatin of colored blood corpuscles in malarial fever 48
Hæmaturia, malarial pathology of 47, 80
Comparison between malarial hæmaturia and yellow fever 58
Hamilton, J. B., M. D., Surgeon General United States Marine Hospital Service ..... lxii, lxxix
Correspondence of, with President of Louisiana Board of Health lxxx
Inspection service of the United States Marine Hospital service ..... lxxxi, lxxxvii
Letter o the President of the Louisiana Board of Health lxxxviii
Letter with reference to floating ward, or hospital, in the harbor of New Orleans, for the isolation and treatment of contagious and infectious diseases cxix
Hargis, R. B. S., M. D., President of Pensacola Board of Health, letters of, to President of the Louisiana Board of Health, August 11, 1882 lxxiii
Hamilton, Dr., of Chattanooga, Tennessee, on spurious vaccination amongst the Confederate forces serving in East Tennessee 422
Hamilton, Frank Hastings, M. D., on the condition of Confederate wounded at Murfreesboro, Tennessee 406
Habersham, S. E., M. D., report on spurious vaccination in the Confederate army, by 410
Harvey, Gideon, in his "Venus Unmasked," records facts illustrating the contagious nature of constitutional syphilis 496
Hamlin, Augustus C., M. D., Medical Inspector United States Army, on Federal prisoners confined in Camp Sumpter, Andersonville, Georgia 400
Heart, pathology of, in yellow fever 67
Pathology of, in malarial fever 67
Hebra Prof., opinion of, as to the question whether lymph from a true Jennerian vesicle has ever been a vehicle of syphilitic, scrotulous or other constitutional infection to the vaccinated person 484
Heberden, on varicella (chicken-pox) 436
Holland, of North Carolina, on Quarantine 13
Hister, of Pennsylvania, on Quarantine 11
Holwell, Mr., on inoculation for the small-pox in India 279
Homans, of Boston, on erysipelas following vaccination 7
Hooper, on cow-pox 353
Home, Dr., of Edinburgh, inoculation of measles, 1758 434
Holstein, history of cow-pox in 300
Horse-pox, relations of grease in the horse's heels to cow-pox 348
Artificial production of, by inoculation 352
Character, symptoms and course of 353
Hippocrates, on erysipelas 455
Hicks, Surgeon C. S. A., on spurious vaccination 469
Haigill, Surgeon C. S. A., on spurious vaccination 469
Hammerton, Clement, M. D., on contagious nature of constitutional syphilis 500
Holt, Joseph, M. D., Sanitary Inspector First District of New Orleans, report of, to Board of Health clxxxi
Hospital, Mississippi Quarantine Station ..... xxv, xxxvii
Charity of, New Orleans cxxxix
Gangrene 85

	PAGE.
Hunter, John, examination of his doctrine that diseased actions are incompatible with each other.	427
On the contagious nature of constitutional syphilis	497–499
Humboldt, Alexander, on cow-pox in America	345
Hutchinson, Jonathan, Mr., cases of vaccino-syphilis recorded by	518–529
Huder, on poisonous vaccine lymph	455
Huxham, John, M. D., on putrid fever	401
Hunter, John, on scorbutic ulcers	402
Hubbard, George H., Surgeon U. S. A., on vaccino-syphilis	483
Hunt, Thomas, M. D., on vaccino-syphilis	485
Hübner, on vaccino-syphilis	507
Hutchinson, J., on vaccino-syphilis	486
Hydrophobia, Dr. Jenner proposed vaccination as a remedy for	335

I

Imports, value of in New Orleans	xxxiii
Infantile diseases, deaths from, in the city of New Orleans during a period of 27 years (1847 to 1880)	
Infected ships from Rio de Janeiro	cccix
Vessels at Mississippi Quarantine Station	xxxv
Vessels from Rio	xxxvii
Inoculation for small-pox, history of	cviii
Practice of	277
Mortuary statistics of London relating to inoculation	282
In India	284
Mr. Holwell's description of inoculation for the small-pox in India	278
Chinese method of inoculation for the small-pox	279
The mortality statistics of London demonstrate that inoculation actually increased the mortality from small-pox	279
Inoculation for the measles first performed by Dr. Home, of Edinburgh, in 1758	284
Inoculation for measles by Wachsel and von Katina	434
Inoculation for small-pox, comparative phenomena of, and cow-pox	434
Inoculation for cow-pox (vaccination)	365
Inquests held by coroner in New Orleans	366
Intermittent fever, pathology and symptoms of	cccxvi
Table showing the prevalence of in New Orleans at different seasons of the year	44–81
Fever statistics of the Charity Hospital of New Orleans; table showing the monthly and annual admissions of the different fevers and diseases	clxviii
Ireland, history of cow-pox in	cclxviii
Deaths from small pox in	299
Intra-mural sepulture in New Orleans	290
	cccxxvii

J

Jacobs, on cow-pox	
Jefferson, Thomas, of Virginia, President of the United States, introduction of vaccination by, into the Southern States	253
Letter of to Dr. Edward Jenner	315
Correspondence of with Dr. Benjamin Waterhouse, of Cambridge, Mass., with reference to vaccination	313
Observations on yellow fever in New Orleans, and measures for its prevention	316–322
Jenner, Edward, M. D.—	cxxxvi
Works of Edward Jenner	
An inquiry into the causes and effects of the variolæ vaccinæ, a disease discovered in some of the western counties of England, particularly Gloucestershire, and known by the name of the cow-pox, by Edward Jenner, M. D., F. R. S. Third edition, London, 1801	142
Further observation on the variolæ vaccinæ, by Edward Jenner	143–159
A continuation of facts and observations relative to the variolæ vaccinæ or cow-pox, by Edward Jenner, M. D., F. R. S., etc, London, 1801	161-177
Dr. Jenner's account of the origin of the vaccine inoculation	179–188
Dr. Jenner's instructions for vaccine inoculation	189–191
Dr. Jenner referred the reputed failures of vaccination to several causes	191–193
Views of Dr. Jenner on the causes of the abnormal phenomena of vaccination	263–265
Letter of Thomas Jefferson to	387–393
Letter of John Quincy Adams to	313
Pointed out causes of the accidents attending vaccination, and gave rules for their avoidance	314
On the varieties and modifications of the vaccine disease	423
Answer to his inquiries by the rector of Lackhamstead	423
On the relations of grease in the horse to cow-pox	423
Opinion of on the value of vaccination to prevent the Oriental plague	348
Proposed vaccination for the cure of hydrophobia	384
Refutes the attacks of Mosley, Rowley and Squirrel	385
Careful attention of Dr Jenner to the deviations of the vaccine vesicle	387
On causes of failures in vaccination	394
Letter to Dr Waterhouse	423
On contamination of vaccine matter with small-pox matter	429
Johnston, Joseph E., General C. S. A., letter of, relative to Federal prisoners	499
Joler, on epidemic measles	417
Jenner, Henry S., on advantages of vaccination	433
Johnson, Wirt, M. D., on small-pox in Mississippi	254
Jones, Stanhope, M. D., report of inspection of shipping in the port of New Orleans	101
Jenner, William, on vaccino-syphilis	cvi
Jones, Mr., of Chesterfield, on vaccino-syphilis	486
	486

PAGE

Jones, Joseph, M. D., President of the Board of Health of the State of Louisiana, 1880 to 1884; measures instituted by, for the arrest of small-pox iii
Report of, detailing the general results of the Quarantine operations of the Louisiana Board of Health, 1880 to 1883 xxiii
Instructions to Inspector at Port Eads xxix
Official action in case of British Steamship Vanguard xxix
In case of Swedish Bark Excelsior xxx
General review of the operations of the Louisiana Board of Health, 1870 to 1881 xl
Report of yellow fever of 1882, and measures instituted for the arrest thereof, in New Orleans, Louisiana lv
Official action of, in the case of John Forbes, attacked with yellow fever at 98 Old Levee street, July 22, 1882 lvi
Official action with reference to Steamship Marco Aurelio, which brought John Forbes from Havana to New Orleans lviii
Orders issued to Sanitary Inspector, Third District, New Orleans, with reference to isolation and disinfection of No. 98 Old Levee street and Steamship Marco Aurelio lviii
Orders issued to Captain of Steamship Aurelio lxi
Order commanding Civil Sheriff of parish of Orleans, to remove the Steamship Marco Aurelio to the Quarantine station lxi
Correspondence with the Consul of the British with reference to the forcible seizure of the steamship Marco Aurelio l
Letter to Governor of Louisiana relative to return of steamship Marco Aurelio, ... lxii
Report of case of Louis Deschler, July 17, 1883 lxiii
Directions to Sanitary Inspector Fourth District, with reference to case of Deschler, lxv
Report of case of Johannes Stroh, attacked with yellow fever July 27, 1882, at No. 25 Enghein street, New Orleans, ... lxvi
Instructions to Sanitary Inspectors and municipal authorities of New Orleans, with reference to the isolation and disinfection of No. 25 Enghein street, and the surrounding portions of New Orleans lxviii
Report of the case of Malachias England lxx
Establishment of Quarantine against Pensacola, Florida lxv
Orders with reference to bark Berna, with yellow fever, at Mississippi Quarantine Station xc
Quarantine proclamation, July 23, 1883 xciv
Letter to Governor of Louisiana, with reference to exclusion of infected vessels from the mouths of the Mississippi River, September 19, 1882 .....
Climate and diseases of Rio de Janeiro cix
History of Quarantine in Louisiana cxix
Letter to J. Floyd King, with reference to National and State Quarantine cxiv
Interstate Quarantine cxvi
Re-establishment of Marine Hospital Service in New Orleans cxvii
Efforts to secure the passage of an act by Congress establishing a floating ward in the harbor of New Orleans cxviii
Letter to Governor of Louisiana, urging the necessity of legislative action with reference to the maintenance of the Quarantine laws of Louisiana cxxiv
Letter to Speaker of House of Representatives of Louisiana, in 1882, urging action on the Quarantine bill, May 8, 1882 cxxvi
Letter of, to the Governor, President of the Senate and Speaker of the House, of the General Assembly of Louisiana, discussing the relations of Quarantine to the public health and commerce cxxvii
Letter to the Attorney General of Louisiana, with reference to the suit of Morgan's Louisiana Railroad Company against the Board of Health clxvii
Letter to Governor of Louisiana, with reference to the decision of Judge Monroe clxviii
Comparative view of the mortality of New Orleans during a period of four years, 1880, 1881, 1882, 1883 clxxiii
Outline of the history, theory and practice of Quarantine 11–30
Measures for the prevention and arrest of contagious and infectious diseases 35–133
General outline of the symptoms and pathological anatomy of yellow and malarial fevers 44–81
Constitution of the atmosphere in yellow fever epidemics 82
Rules and regulations governing Quarantine, and quarantine stations and vessels in Louisiana 89
Prevention and arrest of yellow fever in cities and towns of the Mississippi Valley. 95
Measures for the prevention and arrest of small-pox 116
Vaccination, variolæ vaccinæ (cow-pox), variola and varioloid, and spurious vaccination in general, civil, hospital and military practice, and in the Confederate army during the American civil war, 1861–1865 135–542
Johnson, Wirt, M. D., on small-pox in Mississippi 111

K

Kelley, Prof., M. D., President of Board of Health of Galveston, Texas, letter of President of Louisiana Board of Health to, relative to the case of Louis Deschler, June 17, 1882 .. lxiv
King, Hon. J. Floyd, correspondence of, with President of Louisiana Board of Health with reference to a National Quarantine cxv
Kettera, of Pennsylvania, on Quarantine 11
Kidneys, pathological anatomy of, in yellow fever and in malarial fever 75
Kratz, O., M. D., surgeon U. S. A., on vaccination and variolous diseases 470

L

Lacto-variolous, or modified inoculation 530
Langenbeck, on the inoculation of cancer 494
Lafosse, on the artificial production of horse-pox by inoculation 252
Lankford, A. P., M. D., of St. Louis, Mo., on epidemic yellow fever of 1878 clxiv

PAGE.

Larry, on erysipelas following vaccination in the French army 454
Latham, P. M., M. D., on vaccino-syphilis 486
Lebert, on the inoculation of tubercle 487
Lanoix, of Paris, on animal vaccination 536
Lead, poisonous effects of cccxli
Lee, Robert E., General, letter to Dr. Joseph Jones, with reference to Federal prisoners 413
Levees of Mississippi river ccclxvii
Lind on scurvy 402
Literature of vaccination 253
Locock, Charles, Sir, on vaccino-syphilis 486
Lever, on vaccino-syphilis 486
Liver, pathological changes of, in yellow fever 72
Pathological changes of, in malarial fever 72
Fatty degeneration of, in yellow fever 72–75
London—Report of the Royal College of Physicians of London on vaccination 355
Report of Royal College of Surgeons on vaccination 260
Mortality of 283
Mortuary statistics of 284
Statistics illustrating the annual average births and burials in (1671 to 1781) 285
Deaths from small-pox in (1807 to 1860) 285
Mortuary records of 287
Logan, John, sanitary officer Fourth District, report of case of Louis Deschler lxix
Lookout Station—Establishment of Quarantine Inspector and officers at English Lookout, on the coast of Louisiana, opposite Mississippi, for the protection of New Orleans from the introduction of yellow fever from Mississippi, Alabama, Florida, Mexico and the ports of South America and the West Indies ..... lxxiv, lxxvii, cvii
Louisiana Board of Health—Measures instituted by its President for the arrest of contagious and infectious diseases ii
General results of Quarantine operations of 1880–1881 ..... xxiii, xxxiv
General review of financial operations of xl
Quarantine and sanitary operations, 1882 li
Quarantine operations, 1883 lxxxiv
Proceedings of ..... lxxii, lxxvii, lxxviii, lxxix, xcv, xcv
Action of, with reference to United States Marine Hospital Service c
Non-intercourse in 1883 ..... xcv, xcvii, ci
Acts proposed by, for the establishment of a floating hospital or ward in the harbor of New Orleans, for the isolation and treatment of contagious and infectious diseases cxix
Rules and regulations for the government and Quarantine officers and stations 89
Sanitary rules for shipping 89
Disinfection and disinfectants 91
Disinfection, fumigation and purification of vessels from ports in which yellow fever prevails 91
Discharge of cargo and purification of infected vessels 91
Rules governing the sick at Quarantine stations 92
Classification of merchandise at Quarantine stations for sanitary measures 92
Rules regulating foul vessels 92
Sanitary rules governing shipping in the port of New Orleans 94
Proceedings September 6, 1883, relative to small-pox 137
Louisiana—Small-pox in ..... xix, xx, xxi, xxii
History of Quarantine in cxxi
Progress of commerce and population in, during the French domination 1684 to 1763. Progress of population and commerce under the Spanish domination cxxxv
Under American domination cxxxvi
Quarantine acts of 1855 cli
Lay, on horse-pox 350
Lufton, on horse-pox 350
Lunford, of Jamaica, on yaws 431
Lyman, W. Hon., of Massachusetts, on Quarantine 12
Louis XIV., of France, charter granted Crosart cxxxi
Louisiana—Climate and health of; observations on the climate and health of Louisiana, and more especially upon the relations of the climate of New Orleans. Epidemic and endemic diseases by Joseph Jones, M. D ..... ccxliv et seq
Lymph, dried vaccine lymph, or scabs, in which decomposition has been excited by carrying the matter about the person for a length of time 441–443
Dried vaccine lymph, or scabs, from patients who had suffered with erysipelas during the progress of the vaccine disease, whose systems were in a depressed state from improper diet, bad ventilation, and the exhalations from typhoid fever, erysipelas, hospital gangrene, pyæmia and offensive suppurating wounds 449–462
Lupara, lupara series of vaccino-syphilitic inoculations 512–513
Lungs, pathology of, and in yellow and malarial fevors 70

M

Malarial Fever—
Symptoms of 44–46–81
Varieties of 47
Hæmaturia 47–57
Hæmaturia comparison with yellow fever 57
Fevers, table of admissions into Charity Hospital of New Orleans, 1849–1861 cclxviii
Fever statistics of the Charity Hospital cclxviii
Deaths from, by months, 1869–1880 cclxxi
Marson, on vaccino-syphilis 486
Marten, Dr., of Bristol, on vaccino-syphilis 486
Marley, of Sunderland, on vaccino-syphilis 486
Marone, on vaccino-syphilis 510
Maitland, Sir Thomas, established a cordon sanitaire around Volotta in 1813 20

PAGE.

Martin, Henry A., M. D., of Boston, Massachusetts, on Jefferson as a vaccinator 315
Introduces animal vaccination into America 537
Mahomet and his followers spread the contagion of small-pox 277
Mather, Rev. Cotton, advocated inoculation for small-pox in America 281
Mandeville, W. R., M. D., Sanitary Inspector Fourth District New Orleans, La., reports of xii
Instructions to, by President of the Board of Health in case of Louis Deschler lxv
Report of, in case of Louis Deschler ..... lxv, lxvi
Report of lxxvii
Marks, I. N., member of the Board of Health of the State of Louisiana –
On arrest of small-pox xvii
On Quarantine lx
Resolutions of, relative to United States Marine Hospital Service lxxii
Resolutions of, with reference to Memphis embargo against New Orleans ..... lxxviii, lxxix
Resolutions indorsing United States Marine Hospital Service lxxxvii
Relative to New Orleans Auxiliary Sanitary Association xciii
Relative to Dr. Rauch xciii
Resolutions of, requesting the Governor of Louisiana to issue his proclamation declaring non-intercourse with places infected with yellow fever xcvii
Mainegra, Dr., report on diseases of Vera Cruz cxii
Maritime Association of New Orleans, resistance of, to the Quarantine laws of Louisiana xxxv
Mead, J. A., M. D., Secretary Hancock County (Miss.) Board of Health lxxxvi
Mexico– Vera Cruz, mortality of cxii
Milledge, of Georgia, on Quarantine 16
Monroe, Judge, of New Orleans, decision of, in case of Morgan vs. Board of Health 18
Micrococci in yellow fever blood 57
Micrococci in blood and black vomit of yellow fever 87
Milk, relations of its adulterations to the diarrhœal diseases of children cccliii
Mioton, Eug. J., M. D., Sanitary Inspector Third District New Orleans, Louisiana, report of xi
Instructions of the President of the Board of Health, with reference to the Marco Aurelio, and case of Forbes lvii
Also, the case of Stroh and report of ..... lxix, lxiii
Mississippi Quarantine Station, history of, and operations at—
xxiii, xxix, xxxi, xxxiv, xxxvii, xlvi, lxxx, lxxxix, civ, cxiii, clv
Mississippi River, quarantine inspection station established at mouth of xxixi
Miles A. B., M. D., House Surgeon, Charity Hospital, report of ..... lxiii, lxxiii
Memphis Board of Health, embargo established by, against New Orleans lxxviii
Macbride, Daniel, M. D., on scorbutic ulcers 402
Macleod, George H. B., M. D., on hospital gangrene in the Crimea 404
McMichael, on variolation of cow 533
McGuire, Hunter, M. D., report on the wounded of the army of General Jackson in the Valley of Virginia 461
Moreland, Dr., of Boston, on the relations of variola and vaccination 432
Measles—John Hunter on the occurrence of during small-pox 428
Joseph Adams, M. D., on the relation of measles and scarletina to small pox 429
Drs. Stetson, Winterbottom and Wilson, on 429
Relations of to small-pox and vaccination 429–435
Deaths from in New York during a period of 50 years (1804 to 1853) 325
Deaths from in Philadelphia 328
Medical Profession, opinion of, in 1818 and in 1839 as to the protective powers of vaccination 271–275
Microscopical characters of vaccine lymph and the contagious matter from the small-pox pustules 363
Massachusetts, introduction of vaccination into, by Dr. Benjamin Waterhouse 328
Number of cases in 3
Military Commission—Examination of the charge urged by the United States Military Commission, that the Confederate surgeons deliberately poisoned or destroyed the Federal prisoners at Andersonville, with poisonous vaccine matter 418
Michel, Middleton, M. D., on vaccination 418
McGuire, Hunter, M. D., on vaccination 418
Measles, relations of the vaccine disease to measles, with the observations of various authors 296–303
Mead, Dr., on origin of the small-pox 278
Experiments on inoculation for small-pox 280
Montague, Lady Mary Wortley, introduces inoculation for the small-pox into England 280
Moore, S. P., Surgeon General C. S. A., orders of 399
Measles, inoculation of, by Home, Wachsel and Von Katona 434
McEnery, Samuel Douglass, Governor of Louisiana, Quarantine proclamations of ..... lxxiv, xcvi
Letter of to the Louisiana Board of Health, urging the adoption of non-intercourse with places infected with yellow fever xcv
Letters to President of Louisiana Board of Health xcvii
Makes final disposition of Dr. Patton, inspector of the National Board of Health xcix
Proclamation of September 3, 1883 cii
Marco Aurelio, steamship, case of yellow fever in one of her crew (Henry Forbes), June 22, 1882 lvi
Sanitary condition of lvii
Orders issued by President of Board of Health with reference to steamship Marco Aurelio, and sanitary measures to prevent the spread of the infection from Forbes (correspondence with British consul) ..... lvii, lx, lxi, lxii, lxiii
Mortality of New Orleans ..... lii, liv, clxxxiii, clxxiv, clxxv, clxxix, clxxxi, clxxxli, cxcii, cxcix, cxcvi
Of white and colored races ..... ccexviii
In different ages ..... ccciixx, ccexx
From principal diseases ..... ccexxii
Among the sexes ..... ccexxii
In different periods of life ..... ccexxiii
Occasioned by inoculation of small-pox 282
Mortuary statistics of London, showing that inoculation increased the number of deaths from small-pox 284
Record of London 287
Records of England 288–296

PAGE.

Mortality by small-pox, in Copenhagen 291
In New Orleans 138
Occasioned in New Orleans and the Mississippi Valley by phthisis 488
Modified, or lacto-variolous inoculation 530
Mosely, B., M. D., attack of, on vaccination 386
Mississippi River, chemical and physical properties of its waters, sediment of and overflow of ..... cclxix, ccclxxxv
Sediment of ccclxxxvi

N

National Board of Health, inspection service of ..... lxxvii, lxxviii, lxxix, lxxx, cxiv
Disposition of Quarantine Inspector of, by Governor McEnery xcix
Negni, of Naples, on animal vaccination 535
Negro race, vital statistics of and mortality of cccxviii
Nervous system, cerebro-spinal pathology of, in yellow fever 65
In malarial fever 65
New England States, introduction of vaccination in by Dr. Benjamin Waterhouse, of Cambridge, Massachusetts 312
New York, introduction of vaccination into 323
Deaths from all causes, small pox, measles, scarlet fever and phthisis pulmonalis, during a period of fifty years (1804 to 1853) 325
Quarantine laws of 7
New Orleans, Louisiana—
Sanitary condition and diseases, mortality and vital statistics of ..... ii, v, viii, xix, xxi, xxii, xxx
Value of imports and exports xxxiii
House to house inspection in lii
Mortality ..... lii, liii
Mortality from 1845 to 1882 liv
Sanitary condition lx
Yellow fever of 1882 ..... lx, lxvi
Sanitary measures instituted by the President of the Board of Health for the suppression of the yellow fever of 1882 lxviii
Yellow fever of 1882 ..... lxix, lxx
Quarantine against Pensacola lxxiii
Protection of from yellow fever lxxxv
Inspection of shipping cvi
History of under French domination (1684 to 1783) ..... cxxxi, cxxiv
History of under Spanish domination (1763 to 1802) cxxxv
History of under American domination cxxxvi
Population in 1803 cxxxvii
Population in 1806 cxxxviii
Population in 1810 cxl
Battle of cxli
Epidemics ..... cxlvi, cxlvii
Imports and exports of ..... clvi, clvii, clviii
Mortality of ..... clxxiii, clxxiv, clxxv, clxxxi
Vital and mortuary statistics of ..... cclxv, clxxii, ccci, clxxxi, ccciii, cccvii
Small-pox in 135–138
Mortality occasioned by fevers 488
Non-intercourse—Exclusion of vessels infected with yellow fever, and vessels from ports in which yellow fever was prevailing, from the waters of Louisiana lxxxix
Nott, J. C., M. D., on erysipelas in the Confederate army 459
On small-pox epidemic in Mobile, Alabama, during the winter of 1865–6 480
Noble, of Manchester, England, on vaccino-syphilis 486

O

Observations of Drs. Jenner, Woodville, Adams, Willan, George Hennen, Fowler, and Bosquet, on the relations of the vaccine disease to small-pox 444–449
Ogden, Hon. R. N., Speaker Louisiana House of Representatives, letter of President of Board of Health to, relative to Quarantine laws, May 30, 1882 cxxvii
Organisms, microscopical—Agency of the organisms observed in the atmosphere of yellow fever, and in the blood and black vomit 87
Orleans, parish of, population in 1880 cxxxviii
Oriental plague, experiments of M. Valli in 384
Opinion of Dr. Jenner as to the possibility of arresting it by vaccination 385
Description of 335
Relations of the oriental plague to vaccination 336
Outline of the Sanitary and Quarantine operations of the Board of Health, State of Louisiana, 1880–1883 ..... iii, cc, ccli
Results of post mortem examination in case of yellow fever lxxxiv
Quarantine operations, 1883 lxxxiv
Overflows of the Mississippi River cccIxix
Amount of sediment contained in the waters of the Mississippi ccclxxi
Early investigations on the sediment of the Mississippi River ccclxxiii
Previous to the erection of levees, the delta of the Mississippi was annually overflowed ccclxxvii
Floods of the Mississippi ccclxxix

P

Pathology of yellow and malarial fevers 44–85
Pathological anatomy of yellow and malarial fevers 65–81
Pacchiotti, of Turin, on vaccino-syphilis 509
Paul, De, on vaccino-syphilis 501, 507, 512, 515, 517

PAGE.

Pearson, George, M. D—An inquiry concerning the history of the cow-pox, principally with a view to supersede and extinguish the small-pox. By George Pearson, M. D., F. R. S., Physician to St. George's Hospital, of the College of Physicians, London. 1798 195-222
Letter of, on the effects of inoculating the vaccine disease 253
Statement of the progress in vaccine inoculation 253
On the eruptions resembling the small-pox, which sometimes appear in the vaccine disease 154
Paré, on gunshot wounds 401
Passy, near Paris, discovery of cow-pox at, in 1836 307
Pellizari, of Italy—Experiments of demonstrating the possibility of inoculating healthy subjects with blood drawn from patients suffering with secondary or constitutional syphilis 502
Pepys, Lucas, President of the Royal College of Physicians, report on vaccination 255
Pitcairn, on the contagious nature of erysipelas 457
Pertussis, vaccination recommended as a cure in, by Dr. Archer, of Maryland 335
Philadelphia, deaths from small-pox, scarlet fever and typhoid fever in 327
Phthisis pulmonalis, deaths from, in New York, 1804-1853 326
Inoculability of tubercle 487
Experiments of M. Villemin, Lebut, Burden Sanderson, Koch and Formad, on the nature and inoculability of tubercle 488
Mortality occasioned in New Orleans by 488
Ætiology of ..... 488, ccc
Deaths from, in New Orleans cccxi
Pike, Fort, Quarantine operations at ..... xxxii, xxxviii
Pensacola, Florida, establishment of Quarantine against, August, 1882 lxxiii
Pearl River, and Pearlington, Miss., protection of New Orleans from, yellow fever by way of lxxxv
Parish prison of New Orleans, statistics of ..... cccxii, cccxiii
Percival, W. D., M. D., on the communication of syphilis by vaccination, among the inhabitants of Graniteville and vicinity, in South Carolina, 1866 477
Powell, A. H., M. D, Surgeon C. S. A., on spurious vaccination 469
Prisons of New Orleans cccxi
Police stations of New Orleans cccxi
Poor, sick and destitute, of New Orleans cccxiii
Public institutions of New Orleans deaths in cccxv
Post mortem examination of Louis Deschler lxiii
Of Johannes Stroh lxvii
Of Malachias Englund, yellow fever, 1882 lxxiii
Pratt, George K., M. D., member of the Board of Health of the State of Louisiana, views of, on Quarantine lx
Proclamations, Quarantine ..... lxxxiv, xcvi
Population of the principal cities of the United States, classified by race 100
Puerperal fever 85
Putrid blood, poisonous properties of 87
Price, M. D., on contagious nature of constitutional syphilis 509
Preventable causes of disease and death ..... cccxxvii, cccIxciii
Plague, oriental, relations of, to vaccination 384
Prisoners, Federal, confined at Andersonville, Georgia 397
Effects of scurvy on 397
Effects of vaccination on 397
Results of the investigations of Surgeon Joseph Jones, M., D., on their condition and diseases 397-419
Testimony of Dr. E. A. Flewellen, on condition of 479
Preventable causes of disease and death cccxxvii
Mode of burial cccxxviii
Interments in the various cemeteries of New Orleans, 1833-1883 cccxxxi
Preventable causes of diseases and death cccxxxvi
Adulteration of drugs cccxxxvii
Difficulty of controlling the sale of poisons cccxxxviii
Irritant poisons cccxxxviii
Neurotic, spinal, cerebro spinal and gaseous poisons cccxxxix
Copper vessels and copper, in articles of food cccxl
Lead, and its compounds cccxlii
Gaseous poisons cccxliii
Number of cases of poisoning, accidental or intentional, in New Orleans cccxlv
Deaths from poisoning in the Charity Hospital cccxlv
Cases of deaths from poisoning, suicide, murder, and general and local injuries. 1849-1880 cccxlvii
Poisonous effects of alcohol cccxlviii
Food resources of Louisiana cccl
Purity of the sugar and molasses of Louisiana cccli
Nutritive and agricultural value of cotton seed ccclix
Louisiana rock salt ccclxiii
Abundant supplies of fruit, game and fish in Louisiana ccclxvii
Effects of overflows upon the health of the inhabitants of the delta of the Mississippi river ccclxix
Relations of overflows to disease and death ccclxxix
Water supply of New Orleans—Chemical composition of the water of the Mississippi and of the cisterns, and of other rivers in Louisiana ccclxxxii
Poisons, divisions of, and effects of, upon the mortality of the human race ..... cccxxxviii, cccl

Q

Quarantine—
General results of the Quarantine operations of the Board of Health of the State of Louisiana. (1880 to 1884) ..... xxiii, xxv, xxvii, xxviii, xxix, xxx, xxxi, xxxii, xxxiii, xxxiv, xxxv, xxxvii, xxxviii, xl, li, lxxi, lxxiii, lxxxi, lxxxiii, lxxxiv, lxxxv, lxxxvii, l xxviii, lxxxix, xci, xcii, xciv, xcv, xcvi, xcvii, xcviii, xcix, c

PAGE.

Letter of President of the Louisiana Board of Health to the Governor, with reference to the exclusion of infected vessels from the waters of Louisiana..... cli
Quarantine operations in 1883.....civ, cvi, cvii, cvii, cix
Maintenance of the Quarantine laws of Louisiana..... cxiv
Relations of National and State Quarantine..... cxiv
History of Quarantine in Louisiana .....cxiv, cxv, cxvii, cxviii
Efforts of the Louisiana Board of Health to secure the passage of an act by Congress for the establishment of a floating ward or hospital in the harbor of New Orleans..... cxix
History of Quarantine in Louisiana .....cxx, cxxi, cxxiii, cxxiv
Letter of President of the Louisiana Board of Health to the Governor, December 8, 1881, relative to the necessity of legislative action on the subject of Quarantine cxxiv
Letter of President of the Louisiana Board of Health to the Speaker of the House of Representatives, urging legislative action on Quarantine cxxvi
Relations of the Quarantine established by the State of Louisiana in 1855 to public health and commerce .....cxxvii, cxxxi, cxxxv, cxxxvi, cxliv
Quarantine ordinance in 1846 cxlix
Quarantine ordinance in 1847..... cl
Quarantine ordinance in 1855 cli
Fees collected at the Quarantine stations (1857 to 1881)..... clv
Quarantine and commercial operations... clvi, clvii, clvii, clxix, clx, clxi, clxii, clxiii, clxv, clxvi
R sistance to the Quarantine laws of Louisiana by Morgan & Co .....clxvi, clxvii
Expenditures for Quarantine purposes..... clxviii
Letter of President of Louisiana Board of Health to Governor, with reference to the decision of Judge Monroe..... clxviii
Decision of Supreme Court of Louisiana, January 21, 1884, sustaining the Quarantine laws..... clxix
Outline of the history, theory and practice of Quarantine..... 1
Relations of Quarantine to Constitutional and International laws and commerce..... 2
The English colonies of North America adopt Quarantine regulations before their separation from the mother country..... 2
History of Quarantine in South Carolina..... 2
History of Quarantine in Massachusetts..... 3
History of Quarantine in Rhode Island..... 4
History of Quarantine in New York..... 7
All essential questions relating to State and National Quarantine were discussed shortly after the formation of the Federal Union 9
Several seaboard States had Quarantine laws before the organization of the Federal Government, in 1789..... 9
Discussion of Quarantine in the Federal Congress of 1795..... 10
Quarantine bill passed by United States Congress in 1799..... 10
Congress indicated by the acts of 1796 and 1799 that health and Quarantine laws were not in the nature of regulations of commerce 18
Quarantine recognized by International law..... 19
Examples of the forcible execution of Quarantine 20
Quarantine facilitates commerce 21
Commercial statistics of New Orleans..... 22
Commercial statistics of New Orleans (1805 to 1882)..... 23
Important services rendered commerce by detention, cleansing and fumigation of vessels in Quarantine..... 24
Services rendered commerce by the removal of the sick, and their treatment in the Quarantine hospitals 25
History of the erection of the Mississippi Quarantine Station 25
General conclusions relating to the theory and practice of Quarantine, and its relations to constitutional law and commerce 27

R

Rainfall—Monthly and annual rainfall, with deaths from yellow fever in New Orleans for a series of years, consolidated by Joseph Jones, M. D ccli
Races—Comparative mortality in white and colored races in New Orleans..... cccxviii
Ramsay, Frank A , M. D., Surgeon C. S. A., on the abnormalities of vaccination..... 473
Report of the Royal College of Physicians of London on vaccination, with an appendix containing the opinions of the Royal College of Physicians of Edinburg and Dublin, and of the Royal College of Surgeons of London, Dublin and Edinburg..... 255
Report of Commission of the Academy of Paris, consisting of M. C. Velpeau, Ricord, Devergie, Depaul and Gilbert, on the contagious nature of constitutional syphilis..... 501
Ricord on the contagious nature of constitutional syphilis 501
Re-vaccination, establishment of 273
Rivalta, Italy—Communication of syphilis to forty-six children and twenty nurses at Rivalta, Italy, by vaccination..... 509
Account of the tragedy, by Dr. Pacchiotti, of Turin 510
Genealogical scheme of the Rivalta series of vaccino-syphilis inoculations..... 511
Reno, Dr., on cow-pox 254
Rhazes, on small-pox..... 278
Rezzi, on the contagious nature of constitutional syphilis..... 501
Robertson, of Manchester, on vaccino-syphilis..... 486
Rhode Island, Quarantine laws of 4
Royal College of Physicians and Surgeons of London, Edinburg and Dublin, on vaccination .. 255
Rowley, Wm., M. D., attack on vaccination 386
Russell, on the reciprocal influence of small-pox and measles..... 432
Rubiola and small-pox..... 427-435
Rutherford, Surgeon C. S. A., on spurious vaccination..... 469
Receipts of the Board of Health, 1869-1881 ..... xiii, xlviii
Registration of births and deaths xlviii
Ryan, M. D. Sanitary Inspector, sixth and seventh districts, reports of..... xiv, lxxvii

PAGE.

Rigolets Quarantine Station, Quarantine operations at.....xxxii, xxxviii, liclv
Rio de Janeiro, inspection of infected ships from..... xxxv
Yellow fever in 1880-1881..... xxxv, xxxviii
Deaths from yellow fever in..... cix
Case of bark Excelsior from..... cxi
Rules and regulations of the Board of Health of the State of Louisiana, for the government of
Quarantine officers and stations..... 89
Sanitary rules for shipping..... 90

S

Sanitary operations of the Board of Health of the State of Louisiana (1880 to 1884).....xxiii, xxxiv, li
Measures and reforms..... cxcviii
Rules for shipping..... 88
Ships, sanitary rules for and disinfection of..... 88–91
Sanitary and medical inspection of Mississippi Valley..... lxxvii
Scarlet fever..... 131
Mortality occasioned by..... 131
Facts of interest in the natural history of, for the guidance of sanitary officers..... 131
Schuppert, Charles R., M. D., report of case of L. Deschler..... l-iv
Sediments of Mississippi river.....ccclxxi, ccclxxvii
Sigur, N. L., resident physician Atchafalaya Station, reports of.....xxxiii, xl, lxxxiii
Shakspeare, Joseph A., Mayor city of New Orleans—Instructions of President of the Board of
Health with reference to the sanitary measures for the arrest of the yellow fever of 1882
in the Third District..... lxviii
Ship Island, service of U. S. Marine Hospital at..... c
South Carolina, Quarantine laws of..... 2
Smith, Hon., of Maryland, on Quarantine..... 11
Small-pox—
Measures for its arrest by the President and officers of the Board of Health of the
State of Louisiana during the years 1880–1884.....iv, v, ix, x, xi, xii, xiii, xiv, xix
Cases and deaths, classified according to race and nativity..... xxi, xxii
History of in Louisiana (1803 to 1861)..... 97
Deaths from..... 98–99–101
Relations to temperature and seasons..... 103
Deaths in New Orleans..... 103
Measures for the preservation of the public safety..... 104–105
Natural history of, facts essential to the sanitarian..... 108
Treatment of..... 109–110
Vaccination..... iii
Arm to arm vaccination..... 112
Results accomplished in New Orleans by vaccination..... 113
Results of the inspection of the asylums, educational institutions and public schools
of New Orleans..... 46
Sanitary measures for arrest of..... 125
Disinfection and disinfectants (disposal of dead)..... 125–127
Measures for the prevention and arrest of..... 135
Occurrence of after vaccination..... 263
Epidemic of 1818..... 266
Investigations of Dr. Alexander Monro..... 267–272
Theory of Dr. Thompson..... 272
Inoculation..... 277
Mortality occasioned by inoculated small-pox..... 282–284
Death-rate from in various countries before and after introduction of vaccination:
deaths in England from..... 288–290
Small-pox and vaccination in South Carolina..... 329
In Georgia..... 338
In New York (1804 to 1854)..... 325
In Southern States..... 315
In Philadelphia (1807 to 1882)..... 327
In Charleston..... 334
In Savannah..... 329
In Augusta..... 343
Phenomena of..... 367
Comparative view of the natural, inoculated and cow-pox..... 359
Nature of contagion of..... 360
Communicated to animals..... 361
Microscopical characters of the contagious matter..... 363
Illustrations of confluent and distinct small-pox and varioloid..... 363-370
Development and structure of the small-pox pustules..... 370
Changes of the temperature and urine in..... 372–375
Description of by Sir Matthew Hale..... 394
Relations of chicken-pox..... 435
Effects of mixture of small-pox and vaccine matters..... 444–449
Observations of Jenner, Woodville, Adams, Wilson, Hennen, Fowler and Bosquet
upon the relations of the vaccine disease and small-pox..... 444–449
South Carolina—Small-pox and vaccination in..... 329
Sanitary statistics of..... 335
Spain, possessions of in North and South America—Introduction of vaccination into..... 344
Schleswig-Holstein—History of cow-pox in..... 300
Sunstroke, or heat apoplexy..... cclx
Deaths from, in New Orleans, during a series of years..... cclxiii
Statistics, vital, of New Orleans..... ccxcvii
Vital and mortuary.....ccxcviii, ccc, cccxviii
Stephens, Alexander H., Vice President of the Southern Confederacy, on the condition of the
Federal prisoners at Andersonville..... 417
Simms, W. Gilmore, on exchange of rebel prisoners..... 417

PAGE.

Suttons, inoculated for small-pox in England 281
Seaton, Ddward C., M. D., on vaccination, cow-pox, horse-pox, etc 352–354
On vaccination 532
On animal vaccination 536–538
Sanderson, J. Burden, M. D., on small-pox poison 362
Stout, S. D., Medical Director of the general hospitals attached to the Army of Tennessee, on spurious vaccination 478
Simon, Mr., inquiries with reference to the relations of syphilis to vaccination 485
Stokes, of Dublin, on vaccino-syphilis 486
Startin, on vaccino-syphilis 486
Sunderland, on variolation of the cow 533
Sex, mortality among the races, males and females, in New Orleans, Louisiana cccxxii
Stroh, Johannes, attacked with yellow fever July 27, 1882; died August 1st, at No. 27 Enghien street, New Orleans lxvi
Post mortem examination of lxvii
Instructions issued by Joseph Jones, M. D., President of the Louisiana Board of Health, to the Sanitary Inspectors and officers of the third district, and to the municipal authorities, with reference to disinfection, cleansing and fumigation, and the measures for the arrest of yellow fever lxviii
Spleen, pathological anatomy of, in yellow and malarial fevers 75
Stomach, pathological changes of, in yellow and malarial fevers 70
Supra-renal capsules, pathological alterations of, in yellow and malarial fevers 75
Sediment of the Mississippi river cccIxxvi
Swanrick, of Pennsylvania, on Quarantine ii
Symptoms and pathology of yellow fever 44
Of malarial fever 44
Spirillum tenue, in yellow fever black vomit 57
Scurvy, in scorbutic patients all injuries of skin tend to form ulcers of an unhealthy character, 396
Effects of, on the character and progress of the vaccine vesicle 397
Relations of, to the diseases of the Federal prisoners confined at Camp Sumpter, Andersonville, Georgia 397
Sumpter, Camp, Andersonville, Georgia, effects of vaccination on Federal prisoners confined in, 397–419
Spurious vaccination 383–378
Or the abnormal phenomena accompanying and following vaccination, excited the attention of the medical profession of England in the earliest period in the history of vaccination 386
Researches on, in the Confederate Army, during the civil war, 1861–1865, by Joseph Jones, M. D 391–539
In the United States Army 403
Syphilis, relations of, to vaccination—Fresh and dried vaccine lymph and scabs from patients suffering with secondary or constitutional syphilis at the time and during the progress of vaccination, and the vaccine disease—Production of syphilis by vaccino-syphilis 463–542
Vaccino-syphilis in the Confederate Army 465
Syphilis, vaccino, report of Dr. James Bolton, of the Confederate Army, on 466
Testimony of Drs. Powell, Etheridge, Hicks, Haigill, Rutherford, and others, on 469
Dr. Paul F. Eve held that syphilis might be communicated by vaccination 470
Wm. M. Fuqua, M. D., of Virginia, on 472
Dr. Crawford on, in the Confederate Army 476
Prevalence of, at Graniteville, South Carolina, report of, by W. D. Percival 477
Testimony of Dr. E. A. Flewellen, of the Confederate Army, concerning 479
J. C. Nott, on 480
Means of prevention 482
Report of Dr. George H. Hubbard, of the United States Army, concerning 483
Opinion of Hebra on the question whether lymph from a true Jennerian vesicle has ever been a vehicle of syphilis, scrofula, or other constitutional infection, to the vaccinated person 489
Replies of various Surgeons to the questions propounded by Mr. Simon, as to the possibility of communicating syphilis by vaccination 485–487
Syphilis, constitutional, contagious nature of 495
Testimony of Gaspard Torrelli on, 1498 495
Illustrated by the writings of various observers, as William Clowes, 1637; Gideon Harvey, 1665; Daniel Turner, 1717; John Hunter, 1776; Drs. Duncan, William Watson, Hamerton, Egan, Garvin, Price, Rezzi, Waller, Gilbert, and others 498–505
Experiments of Pellizzari, of Italy, demonstrating the possibility of inoculating healthy subjects with blood drawn from patients suffering with constitutional syphilis 503
Post vaccinal 505
Cases of, recorded by Dr. Whitehead 507
M. Viennois, on vaccino-syphilis 508
Rivalta series of 509–511
Lupara series 512
Bergame series 514
Auray series 515
Cases recorded by Jonathan Hutchinson 518–529
Syphilitic virus, precautions for its exclusion during vaccination 539
Stromeyer, on vaccination 259
Squirrel (John Gale Jones), attack on vaccination 386

T

Tables—
Cases and deaths from small-pox ..... v, viii, xii, xix, xxi, xxii
Receipts of Board of Health xxvii
Expenditures xxvii
Vessels arriving at New Orleans xxviii
Inspection at Mississippi Quarantine xxxii
Exports and imports of New Orleans xxxiii

PAGE.

Tables—
Vessels at Quarantine ..... xxxvii, xxxviii
Receipts and expenditures of the Board of Health of the State of Louisiana, 1869-1871 ..... xlii, xliii
Amounts paid by the City of New Orleans for disinfectants, 1870-1881 xliv
Estimated receipts of the Board of Health, 1881 xl
Estimated expenditures l
House to house inspection lii
Mortality of New Orleans, 1883 lii
Mortality of New Orleans, 1845-1882 liv
Vessels at Mississippi Quarantine Station, 1883 cvi
Vessels at Atchafalaya Quarantine Station, 1883 cvii
Deaths from yellow fever in Rio de Janeiro, 1850-1883 ..... cix, cxi
Mortality of Vera Cruz, 1881-1883 cxii
Number and class of vessels inspected at the Mississippi Quarantine Station, 1880-1883 cxiii
Population of the territory of Orleans in 1806 cxxxviii
Births and deaths in New Orleans in 1808 cxxxviii
Receipts at Louisiana Quarantine Station clv
Arrivals of vessels in New Orleans, 1867-1891 clvi
Imports and exports of New Orleans, 1805-1860 clvii
Receipts and expenditures for Quarantine purposes in Louisiana clxviii
Population and mortality of New Orleans clxxiv
Mortality of New Orleans classified by diseases, weeks and months, ... clxxv, clxxvi, clxxvii clxxviii, clxxix, clxxx, clxxxi, clxxxii, clxxxiv, clxxxv, clxxxix, cxci, cxcii
Population of the principal cities of the United States, classified by race 100
Relations of small-pox to temperature 103
Death from small-pox in New Orleans during a series of years 103
Commercial statistics of New Orleans 23
Deaths from fevers in New Orleans 42
Giving the number of deaths by phthisis pulmonalis in the different districts of New Orleans cc
Deaths by yellow fever in New Orleans during 12 years, 1869-1880 cc
Deaths in first district of New Orleans, 1881 ccii
Deaths in second district of New Orleans, 1881 cciii
Deaths in third district of New Orleans, 1881 cciv
Deaths in fourth district, New Orleans, 1881 ccv
Deaths in fifth district, New Orleans, 1881 ccvi
Deaths in sixth district, New Orleans, 1881 ccvi
Deaths in seventh district, New Orleans, 1881 ccviii
Deaths in first district, New Orleans, 1882 ccxiii
Deaths in second district, New Orleans, 1882 ccxv
Deaths in third district, New Orleans, 1882 ccxvi
Deaths in fourth district, New Orleans, 1882 ccxix
Deaths in fifth district, New Orleans, 1882 ccxxi
Deaths in sixth district, New Orleans, 1882 ccxxiii
Deaths in seventh district, New Orleans, 1882 ccxxiv
Deaths in first district, New Orleans, 1883 ccxxxii
Deaths in second district, New Orleans, 1883 ccxxxiii
Deaths in third district, New Orleans, 1883 ccxxxiv
Deaths in fourth district, New Orleans, 1883 ccxxxv
Deaths in fifth district, New Orleans, 1883 ccxxxvi
Deaths in sixth district, New Orleans, 1883 ccxxxvi
Deaths in seventh district, New Orleans, 1883 ccxxxviii
Mortality in the city of New Orleans during 1883, classified by months ccxxxix
Mortality caused by the principal diseases of 1883 cxl
Mortality of 1883, classified according to general classes, months and races ccxli
Mortality from some of the principal diseases during 1882 ccxlii
Deaths classified according to nationality ccxliii
Rainfall—Monthly and annual rainfall, with deaths from yellow fever in New Orleans during a series of years ccli
Monthly and mean temperature of New Orleans, during a series of years cclv
Tuberculosis, and deaths from, in New Orleans ccciv
Tabes mesenterica, deaths from ccciv
Typhus fever, death from cccix
Vital and mortuary statistics of New Orleans ..... ccxcvii, ccci
Deaths from phthisis, 1845-1880 ..... ccci, ccciii, cccv
Extreme maximum and minimum temperature in New Orleans during a series of years cclviii
Deaths from sunstroke cclxiii
Monthly deaths by yellow fever during a series of years in New Orleans cclxvi
Fever statistics of the Charity Hospital of New Orleans cclxix
Fever statistics of the Charity Hospital of New Orleans during a period of 57 years cclxxii
Results of cow-pox inoculation, by Wm. Woodville 244
Mortality statistics of London and England, illustrating the relative value of inoculation and vaccination 285-289
Mortality of England 289
Deaths from small-pox in Ireland 290
In Copenhagen 291
In various countries 292
Fatality of small-pox as it affects the vaccinated and unvaccinated 295
Deaths from small-pox, measles, etc., in New York, 1804-1853 325
In Philadelphia, 1807-1882 327
Mortuary statistics of Charleston, S. C 334
Of Savannah, Georgia 339-341
Of Augusta, Georgia 343
Composition of urine in small-pox 380-382
Thompson, theory of, as to the identity of chicken-pox and varioloid 272

PAGE.

Temperature, changes of, in small-pox 372-373
Tennessee East, spurious vaccination among Confederate troops serving in 422
Tubercle, inoculation of 489
Tubercle, inoculability of, experiments of Villemin, Lebert, Burden Sanderson, Koch and Formad, on the nature and inoculability of 487–494
Mortality occasioned by, in New Orleans, and in the Mississippi Valley 488
Ætiology of 488
Turner, Daniel, M. D., on the contagious nature of constitutional syphilis 498
Torella, Gaspard, on the contagious nature of constitutional syphilis 498
Tennessee Medical Society, resolutions of, relative to vaccination 419
Taynton, on cow-pox 254
Timconi, Dr., on the inoculation for the small-pox at Constantinople, in 1713 290
Trotter, Thomas, M. D., on malignant gangrenous ulcers 404
Thompson, John, of Edinburgh, on small-pox 427
Tompkins, on vaccino-syphilis 486
Turner, Daniel, on the contagious nature of constitutional syphilis 497
Theil, Basil, Dr., on lacto-variolus vaccination 530
Tebault, C. H., M. D., on lacto-variolous inoculation 530
Thiele, of Kassan, on variolization of the cow 533

U

United States Marine Hospital Service—
Resolutions adopted by the Board of Health of the State of Louisiana, sustaining the same lxxii
Inspection service of ..... lxxix, lxxxi
Indorsed by Louisiana Board of Health ..... lxxxvii, lxxxviii
Letter of Surgeon General Hamilton to President Louisiana Board of Health lxxxviii
Ship Island c
Re-establishment of, at New Orleans, and history of ..... cxvi, cxvii
Act of Congress, proposed by the President of the Louisiana Board of Health, for the establishment of a floating ward, or hospital, in the harbor of New Orleans, for the isolation and treatment of cases of contagious and infectious diseases cxix
Urine, changes of, in malarial fever 55
In intermittent and remittent fevers 55–26
In malarial hæmaturia 57
In yellow fever 60
Constitution of, in small-pox 372–380–382
United States of America, introduction of vaccination into 312
United States Military Commission, in the trial of Henry Wirz charged that the Confederate medical officers poisoned the Federal prisoners with poisonous vaccine matter 397
Examination and refutation of the charge 397–419
Spurious vaccination in the United States Army 406–483
Unanue, Dr. Don Apollos, of Lima, Peru, on the climate and diseases of Peru 345

V

Vera Cruz, Mexico—Purification of vessels from, at the Quarantine Station i
Mortality of, during 1881, 1882 and 1883, from yellow fever and other diseases xxxviii
Vomberg, on yellow fever cxi
Vomit, black, of yellow fever 55
Vital and mortuary statistics of New Orleans 55
Venereal diseases, syphilis, etc ..... ccxvii, ccxviii, ccc
Villermin, on the inoculability of tubercle cccvii
Velpeau, on the contagious nature of constitutional syphilis 487
Voigt, Leonhard, M. D., on the variolization of the cow 508-514
Vital and mortuary statistics of New Orleans, Louisiana ..... cclxii, cclxvi. cclxviii, cclxix, cclxx, cclxxi, cclxxii, cclxxiii, cclxxiv, cclxxxvi, ccxcvii, ccxcvi ccxcviii, ccxix, ccc, ccci, ccciii, ccciv, cccxii, cccxiii, cccxvi, cccxviii, cccxix, cccxxi cccxxi, cccxxii, cccxxii.
Vaccination—variolæ vaccinæ (cow-pox), variola and varioloid: accidents attending vaccination; spurious vaccination 135
Causes of the popular opposition to 141
Compulsory 136–140
Works of Edward Jenner on 142–193
George Pearson, on 192–222
Wm. Woodville, on 223–25,
References illustrating the extensive nature of the contributions by various observers to the literature of cow-pox inoculation, during the first five years after Jenner's announcement of his discovery 253
Report of the Royal College of Physicians, of London, on vaccination, with an appendix containing the opinions of the Royal College of Physicians of Edinburgh and Dublin, and of the Royal College of Surgeons of London, of Dublin, and of Edinburgh 255-262
The occurrence of small-pox after vaccination excited in the minds of some distrust as to the protective power of cow-pox inoculation 263
Dr. Jenner referred the reported failures of vaccination to several causes 263-265
Epidemic small-pox of 1818 266
Hostility aroused against vaccination 267
Investigations of Dr. Alexander Munro on small-pox and vaccination 267–272
Mr Bryce's test 267
Opinion of the medical profession in 1818, as to the protective power of vaccination against small-pox 271
Dr. Thomson's theory of the identity of chicken-pox and modified small-pox 272
Establishment of re-vaccination 273
Professional views held in 1839, as to correct vaccination and impediments thereto, 275

Vaccination—	Page.
History of small-pox inoculation	277
Comparative advantages of the inoculated small-pox, and of the cow-pox	278
Mortality occasioned by inoculated small-pox	282
The practice of inoculation for the small-pox substituted a comparatively mild form of the disease, attended with but small mortality; but the total number of deaths by small-pox was thereby increased, and the perpetuation and spread of this loathsome pestilence on the surface of the earth was promoted by inoculation	282
The mortuary statistics of London demonstrated that inoculation actually increased the mortality from small-pox	284
Introduction into United States of America	312
Introduction into Massachusetts	313
Introduction into New England States	313
Introduction into Virginia and the Southern States	315
Introduction into New York	323
Introduction into Philadelphia	326
Introduction into South Carolina	329
Introduction into Georgia	338
Introduction into the possessions of Spain in North and South America	344
Vaccination in Augusta, Georgia	343
Comparative view of phenomena of	365
Spurious vaccination, or the abnormal phenomena accompanying and following vaccination	383
Causes of the various deviations of the vaccine disease from its normal course	383
In the early history of vaccination, protective powers against certain diseases were erroneously attributed to cow-pox inoculation	384
Spurious vaccination, or the abnormal phenomena accompanying and following vaccination, excited the attention of the medical profession of England in the earlier period in the history of vaccination	386
Attacks upon vaccination by Drs. Wm. Rowley, B. Mosely, R. Squirrel (John Gale Jones)	386
Views of Dr. Jenner on the causes of the abnormal phenomena of vaccination	389
Researches upon spurious vaccination, or the abnormal phenomena accompanying and following vaccination in the Confederate army, during the recent American civil war, 1861–1865, by Joseph Jones, M D	391
Section I—Preliminary Observations—Accidents attending vaccination among the citizens and soldiers of the Confederate States—Necessity for the investigation, method, extent and object of the inquiry—The injurious effects of vaccination referred to six causes—Circular letter addressed to the medical officers of the late Confederate army	391–395
Facts illustrating the value of vaccination and the fatality of small-pox	393
Description of small-pox by Sir Matthew Hale	394
Dr. Jenner pointed out some causes of the accidents attending vaccination and gave rules for their avoidance	395
Section II—Modification, alteration and degeneration of the vaccine vesicle, dependent upon depressed and deranged forces, resulting from fatigue, exposure and poor diet; and upon unhealthy, vitiated and scorbutic conditions of the blood of the patients vaccinated and yielding vaccine matter	396–419
In scorbutic patients, all injuries of the skin tend to form foul ulcers of an unhealthy character	396
Effects of scurvy upon the charactor and progress of the vaccine vesicle	399
Investigations upon the effects of vaccination amongst the Federal prisoners confined in Camp Sumpter, Andersonville, Georgia	399
Examination of the charge urged by the United States Military Commission, that the Confederate Surgeons deliberately poisoned or destroyed the Federal prisoners at Andersonville, with poisonous vaccine matter	397–419
Dr. Hamilton, on spurious vaccination in the United States Army	406
Dr. L. Guild, on the medical records of the Army of Northern Virginia	409
Reports on spurious vaccination in the Confederate Army, by S. E. Habersham	410
Report of Dr. James Bolton, of Richmond, Virginia, on the accidents attending vaccination in the Army of Northern Virginia	413
Letter of Gen. R. E. Lee, with reference to Federal prisoners	417
Hon. Alex. H. Stephens, on the condition of the Federal prisoners at Andersonville,	417
Letters of Gens. J. E Johnston and G. T. Beauregard, and W. Gilmore Simms, relative to Federal prisoners	418
Letters of Drs. Middleton, Michael, Hunter, McGuire, James Bolton and Thomas F. Wood, relative to researches on spurious vaccination in the Confederate Army,	418
Section III—The employment of matter of pustules which had deviated from the regular and normal course of development in the vaccine vesicle	420–441
Such deviation or imperfection in the vaccine disease and pustule, due mainly to previous vaccination; or, in other words, the employment of matter from patients who had been previously vaccinated, or who were affected with some skin disease at the time of the insertion of the vaccine virus	420
Prof. Paul F. Eve, M. D., on spurious vaccination	421
Dr R. Hamilton, of Chattanooga, Tenn , on spurious vaccination amongst the Confederate forces serving in East Tennessee	422
Investigations of Dr. Edward Jenner, on the varieties and modifications of the vaccine disease	423
Answer to Dr. Jenner's inquiries, by the Rector of Lackhamstead	423
Observations of Dr. James Davis, of Columbia, South Carolina, on the vaccine and varioloid disease	425
Section IV—Dried vaccine lymph, or scabs, in which decomposition has been excited by carrying the matter about the person for a length of time, and thus subjecting it to a warm, moist atmosphere	441–443
Section V—The mingling of the vaccine virus with that of the small-pox matter, taken from those who were vaccinated while they were laboring under the action of the poison of small-pox	443–449

PAGE.

Vaccination—

Observations of Drs. Jenner, Woodville, Adams, Willan, George Hennen, Fowler and Bosquet upon the relations of the vaccine disease and small pox..... 444–449

Section VI—Dried vaccine lymph, or scabs, from patients who had suffered with erysipelas during the progress of the vaccine disease, or whose systems were in a depressed state from improper diet, bad ventilation, and the exhalations from typhoid fever, erysipelas, hospital gangrene, pyæmia, and offensive suppurating wounds..... 449–462

Dr. Wm. Gardner, of Greene county, Tennessee, on the relations of erysipelas to vaccination..... 450

Cases of erysipelas following re-vaccination, reported by Dr. Greene to the Boston Society for Medical Improvement..... 451

Cases of erysipelas following vaccination, reported to the Boston Society for Medical Improvement by Drs. J. B. S. Jackson, Cabot, Bigelow, Hemans, Putnam and Channing..... 452

Case of constitutional irritation following vaccination, reported by Dr. Charles E. Buckingham, of Boston, Massachusetts..... 452

Erysipelas following vaccination in the French army..... 453

Observations of various authors on erysipelas following vaccination..... 454

Dr. Paul F. Eve did not admit the possibility of the inoculation of erysipelas by vaccination..... 455

Facts illustrating the propagation of erysipelas by contagion..... 456

Testimony of Drs. Wells, Pitcairn, Stevenson, Gibson, Lawrence, George Gregory, Elliotson, Arnott, Thomas Watson, Rogers, Campbell de Morgan and others, as to the contagious nature of erysipelas..... 457–458

Dr. J. C. Nott on erysipelas in the Confederate army..... 459

Report of Dr. J. D. Bell on the prevalence of erysipelas among the Confederate wounded in the Moore Hospital, Manassas Junction, Virginia, in the month of January, 1862..... 460

Immunity of the army of General Jackson from erysipelas, report of Dr. Hunter McGuire, medical director army Valley of Virginia..... 461

Vaccino-Syphilis—

Section VII—Fresh and dried vaccine lymph and scabs from patients suffering with secondary or constitutional syphilis, at the time and during the progress of vaccination and the vaccine disease..... 463–542

Vaccino-syphilis in the Confederate army..... 465

Testimony of Dr. L. D. Gilmore on, to the syphilitic origin of a portion at least of the cases of spurious vaccination in the Confederate army..... 465

Report of Dr. James Bolton, on the relations of syphilis to vaccination in the Confederate army..... 466

Testimony of Drs. A. H. Powell, J. A. Etheridge, Hicks, Haigill and Rutherford, with reference to the causes of spurious vaccination in the Confederate army. 469

Dr. Paul F. Eve held that syphilis might be communicated by vaccination..... 470

On vaccination and variolous disease, by Dr. O. Kratz..... 470

Dr. Wm. F. Fuqua testified as to the syphilitic origin of a portion at least of the cases of spurious vaccination in the Confederate army..... 471

On the communicability of syphilis by vaccination, by Wm. M. Fuqua, M. D., Appomatox county, Virginia..... 471

Abnormalities of vaccination, by Frank A. Ramsey, M. D..... 473

Dr. Crawford, of Greenville, Tenn., traced the impure vaccine virus which produced indurated ulcers and constitutional syphilis to a single individual, and the disease thus disseminated by inoculation yielded to the remedies best adapted to the treatment of syphilis..... 476

Report on the communication of syphilis through the medium of vaccine virus among the inhabitants of Greenville and vicinity, in South Carolina, in 1866, by W. F. Percival, M. D., of Aiken, S. C..... 477

Testimony of Dr. E. A. Flewellyn as to the dissemination of syphilis by vaccination in the Confederate army..... 479

Small-pox epidemic in Mobile, Ala., during the winter of 1865–1866, by Dr. C. Nott. 480

Syphilitic vaccine, and the means of preventing it..... 482

Testimony of Dr. Geo. H. Hubbard, U. S. A., as to vaccino-syphilis..... 483

Opinion of Hebra, as to the question whether lymph from a true Jennerian vesicle has ever been a vehicle of syphilitic, scrofulous or other constitutional infection to the vaccinated person..... 484

Replies of various surgeons and physicians, as Acton, Adderson, Balfour, Barlow, Beatty, Bright, Brenton, Brodie, Burrows, Busk, Ceely, Clark, Crampton, Davis, Erichson, Farr, Jenner, Chesterfield, Latham, Locock, Marson, Noble, Tompkins, Travers, Watson, West, Williams, Wilson, Ackerly, Bennett, Fleming, Hutchinson, Lacock, Lever, Martin, Morley, Starten and Whitehead, to the question propounded in 1856, by Mr. Simon, "Whether they had any reason to believe or suspect that lymph from a true Jennerian vesicle has ever been the vehicle of syphilitic infection"..... 485–487

Inoculability of tubercle..... 487

Experiments of M. Villemin, Lebert, Burden Sanderson, Koch and Formad, on the nature and inoculability of tubercle..... 487–494

Mortality occasioned in New Orleans and the Mississippi Valley by phthisis..... 488

Ætiology of phthisis..... 488

Possibility of transmitting scrofula by vaccination, views of Dr. Edward Ballard... 493

Inoculability of cancer..... 494

Contagious nature of constitutional syphilis..... 495

Testimony of Gaspard Torella, in 1498, as to the contagious nature of constitutional syphilis..... 495

Facts published by William Clowes, in 1637, illustrating the contagious nature of constitutional syphilis..... 495

Testimony of Gideon Harvey, in his "Venus Unmasked," published in 1665, of Daniel Turner in 1717, and of John Hunter in 1776, as to the contagious nature of constitutional syphilis..... 496–498

PAGE.

Vaccino-Syphilis—
Facts illustrating this subject, recorded by Drs. Duncan, William Watson, Clement Hamerton, Egan, Gavin, Price, Rizzi, Waller, Gilbert and others .. 498–505
Experiments of Prof. Pellizzari, of Italy, demonstrating the possibility of inoculating healthy subjects with blood drawn from patients suffering with secondary or constitutional syphilis .. 502
Communication of syphilis by vaccination—Post-vaccinal syphilis—Vaccino-syphilitic inoculation .. 505
Cases of vaccino-syphilis recorded by Dr. Whitehead .. 507
Observations of M. Viennois on vaccino-syphilis .. 508
Communication of syphilis to forty-six children and twenty nurses, at Rivalta, Italy, by vaccination .. 509
Account of the tragedy of Rivalta, by Dr. Pacchiotti, of Turin .. 510
Genealogical scheme of the Rivalta series of vaccino-syphilitic inoculations .. 511
The Lupara series of vaccino-syphilitic inoculations .. 512
Genealogical scheme of vaccino-syphilis inoculations, Lupara series .. 513
Bergame, or Terre de Busi, series of vaccino-syphilitic inoculations .. 514
Genealogical scheme of vaccino-syphilitic inoculations, Bergame series .. 515
Vaccino-syphilitic inoculations, Auray series .. 515
Genealogical scheme of vaccino-syphilitic inoculations, Auray series .. 517
Cases of vaccino-syphilis recorded by Dr. Jonathan Hutchinson .. 518–529
Modified, or lacto-variolus, inoculation .. 530
Variolation of the cow .. 533
Animal vaccination .. 535
Precautions for the prevention of accidents in vaccinations, and more especially for the exclusion of the syphilitic virus .. 539
Vaccine lymph, microscopical characters of .. 363
Virginia, introduction of vaccination into, by Thomas Jefferson .. 315
Valmis, Dr. Francis X de, introduces cow-pox and vaccination into the possessions of Spain in South and North America .. 346
Valentin, of Nancy, on the inoculation of the cow, horse and dog with small-pox matter .. 349
Valli, experiments of, on the prevention of the plague by vaccination .. 284
Varicella (chicken-pox), relations to small-pox .. 435
History and phenomena of .. 435–441
Differential diagnosis of .. 440
Vaccine disease—Relations of the vaccine disease to measles and other diseases, with the observations of numerous authors .. 429–439
Vennois, observations of, on vaccino-syphilis .. 508
Variolæ equinæ .. 369
Variolæ vaccinæ, an inquiry into the causes and effects of the, by Edward Jenner, M. D .. 141–159
Further observations on the, by Edward Jenner, M. D .. 161–177
A continuation of facts and observations relative to the, by Edward Jenner, M. D .. 179–188
Dr. Jenner's account of the origin of vaccination .. 189
Dr. Jenner's instructions for vaccination .. 191

W

Water supply of New Orleans .. cccLxxxii
Water of Mississippi River and Bogue Falaya .. cccLxxxii
Watson, Sir Thomas, on vaccino-syphilis .. 486
On contagious nature of erysipelas .. 458
Watson, Wm., M. D., on the contagious nature of constitutional syphilis .. 499
Waller, experiments of, proving the contagious nature of constitutional syphilis .. 502
Wirt, Dr., on vaccino-syphilis .. 486
Williams, C. J. B., on vaccino-syphilis .. 446
On the causes of phthisis .. 489
Wilson, Sir Erasmus, on vaccino-syphilis .. 486
Whitehead, Dr., of Manchester, on vaccino-syphilis .. 487–507
White race, mortality of in New Orleans .. cccxviii
Wilkinson, C. P., M. D., Assistant Quarantine Physician, report of relative to steamship Marco Aurelio .. lvii
Wise, J. H. P., M. D., resident physician at Atchafalaya Quarantine Station, reports of in 1883 .. cvi
White, C. B., M. D., on Quarantine .. cxxi
Western Company, charter of .. cxxxii
Wiltz, Louis A., Governor of Louisiana, Quarantine proclamation of, July, 1880 .. clxv
Waterhouse, Dr., introduces vaccination in America .. 310–312–315–322–397–419
Wirz, Henry, trial of as commander of the Confederate military prison at Andersonville, Ga .. 418
Wood, Thomas F., M. D., of Wilmington, North Carolina, on vaccination .. 507
Whitehead, Dr., cases of vaccino-syphilis recorded by .. 483
Woodward, on spurious vaccination in the United States army .. 251
Woodville and Pierson, Drs., errors of, arose from the performance of cow-pox inoculation in an atmosphere poisoned by the contagious emanations of small-pox—Correction of the errors of Dr. Woodville by Dr. Jenner .. 252
Willan, Dr. Robert, experiments of in the years 1799 and 1800 on the combined inoculation of the variolous and vaccine fluids .. 437
Operations of in chicken-pox .. 252
On variolous inoculation .. 252
Description of irregular vaccine vesicles .. 429
On relations of small-pox, measles and scarlet fever .. 400
Winder, Capt. W. S., order to Captain Wirz .. 429
Winter, William, on the relations of the vaccine disease to measles .. 453
Wells, Dr., on deaths following re-vaccination .. 456
On the contagious nature of erysipelas .. 456
Watry, on the effects of putrid vaccine matter .. 223–250
Woodville, William, M. D., report of a series of inoculations for the variolæ vaccinæ, or cow-pox; remarks and observations on this disease considered as a substitute for the small-pox, by William Woodville, M. D., physician to the Small-pox and Inoculation Hospitals, London, 1799 .. 223–250

PAGE.

Woodville, William, M. D.—
On the occurrence of pustules in cow-pox 252
Notes on the cow-pox 253
Woodall (charigeous mate), on scurvy 401
Wunderlich, C. A., M. D., on the temperature in small-pox 379

X

Xpsilandry, Hospodar, of Wallachia, on the relation of vaccination to the Oriental plague 334

Y

Yaws, Dr. Lunfeld, of Jamaica, on 431
York, His Royal Highness the Duke of, account of an institution for inoculating the vaccinæ parts, patronized by His Royal Highness the Duke of York 353
Yellow Fever—
Cases of yellow fever on Swedish bark Excelsior, in 1880 xxx
In New Orleans in 1880 xxx
In New Orleans in 1882 lv
First case of, in New Orleans in 1882 (Henry Forbes) lv
Special meeting of the Board of Health of the State of Louisiana, held June 27, 1882, to consider the case of Henry Forbes lv
Letter of Dr. A. de Roaldes, House Surgeon Charity Hospital, announcing case of lvi
Clinical history of Henry Forbes lvi
Orders issued by President of Board of Health to Dr. Mioton, Sanitary Inspector of Third District, with reference to the isolation, cleansing and disinfection of the house and premises, No. 98 Old Levee street, at which Henry Forbes was attacked with yellow fever lviii
Sanitary condition of the steamship Marco Aurelio, which brought Henry Forbes from Havana to New Orleans lviii
Board of Health orders the return of the Marco Aurelio to the Mississippi Quarantine Station lx
Correspondence of the President of the Board of Health with the British Consul with reference to the return of the Marco Aurelio to the Mississippi Quarantine Station lxi
Letter of the President of the Board of Health to the Governor of Louisiana, with reference to the return of the Maeco Aurelio to the Mississippi Quarantine Station lxii
Case of Johannes Stroh, attacked with yellow fever July 27, 1882, died August 1, 1882, at No. 15 Enghein street, New Orleans lxvi
Outline of results of post-mortem examination of Johannes Stroh lvii
Instructions issued by President of the Board of Health to Dr. Mioton, Sanitary Inspector of the Third District, with reference to the disinfection of No. 25 Enghein street and the surrounding portions of New Orleans lxviii
Sanitary measures instituted by the President of the Board of Health for the arrest of yellow fever in New Orleans in 1882 lxix
Case of Malachias Englund, who died of yellow fever in the Charity Hospital, August 14, 1882 lxx
Report of deaths from, at Rio de Janeiro, Empire of Brazil, 1850–1883 cix
Climate of Rio de Janeiro cx
Mortality of the city of Rio de Janeiro from, during the years 1850–51–52–80–81 cxi
Introduction of, into harbor of New Orleans, from Rio de Janeiro, in 1880, by bark Excelsior cxi
Mortality of the city of Vera Cruz from, during the years 1881, 1882, 1883 cxii
Number and class of vessels inspected at the Mississippi Quarantine Station, in 1880, 1881, 1882, 1883 cxiii
Not indigenous to New Orleans cxiii
Destructive effects of, in New Orleans 41
Cases and deaths of, in Charity Hospital, during a period of thirty-six years, 1844–80, ... 41
Deaths from, in New Orleans, 1844–1850 42
Measures for its prevention and exclusion 43
General outline of its symptoms and pathology 44
Symptoms and pathology of 44
General conclusions as to its nature, drawn from original investigations 45
Changes of blood in 46
Chemical and microscopical changes of blood in 48–58
Organized bodies in blood of 51
Organic forms in atmosphere of, in 1878 52
Changes of temperature and pulse in 52
Nature of the febrile stage 53
Changes of the circulation, respiration and temperature in 55
Hemorrhages in 54
Black vomit of, chemical and microscopical characters of 55
Comparison with malarial hæmaturia 58
Causes of the black vomit of 58
Changes of urine in 60
Tabular view of the pathological anatomy of malarial and 65
Exteror, in deaths from 65
Changes of cerebro-spinal system in 65
Acute fatty degeneration of heart in 67
Lungs in 70
Stomach in 70
Intestines in 71
Liver, pathological changes in 72
Microscopical and chemical changes of fever in 72
Fatty liver of 73
Gall-bladder 75
sules 75

PAGE.

Yellow Fever—
Pathological changes of kidneys 75
Constitution of the atmosphere during yellow-fever epidemic of 1878 82
Results of microscopical examination of the air of rooms in which yellow fever cases were confined during the epidemic of 1878 82
Analogy between the origin of hospital gangrene, erysipelas, puerperal fever and yellow fever 85
Agency of the organisms observed in the atmosphere, blood and black vomit of yellow fever 87
Practical application of results obtained from experiments illustrating the nature of the air in yellow fever, and the poisonous properties of black vomit and putrid blood 87
Quarantine and sanitation of ships 88
Rules and regulations for the guidance of Quarantine officers 89
Sanitary rules regulating shipping in the port of New Orleans 94
Prevention and arrest of yellow fever in the cities and towns of the Mississippi Valley 95
Report of deaths from, at Rio de Janeiro, Brazil, 1850–1883, by C. C. Andrews, U. S. Consul General cix
Monthly deaths by, in New Orleans, during a period of years cclxvi
Fever statistics of the Charity Hospital of New Orleans—tables showing the annual and monthly admissions of the different fevers ..... cclxviii, cclxviii
Practical observations on, in New Orleans cclxxv

Z

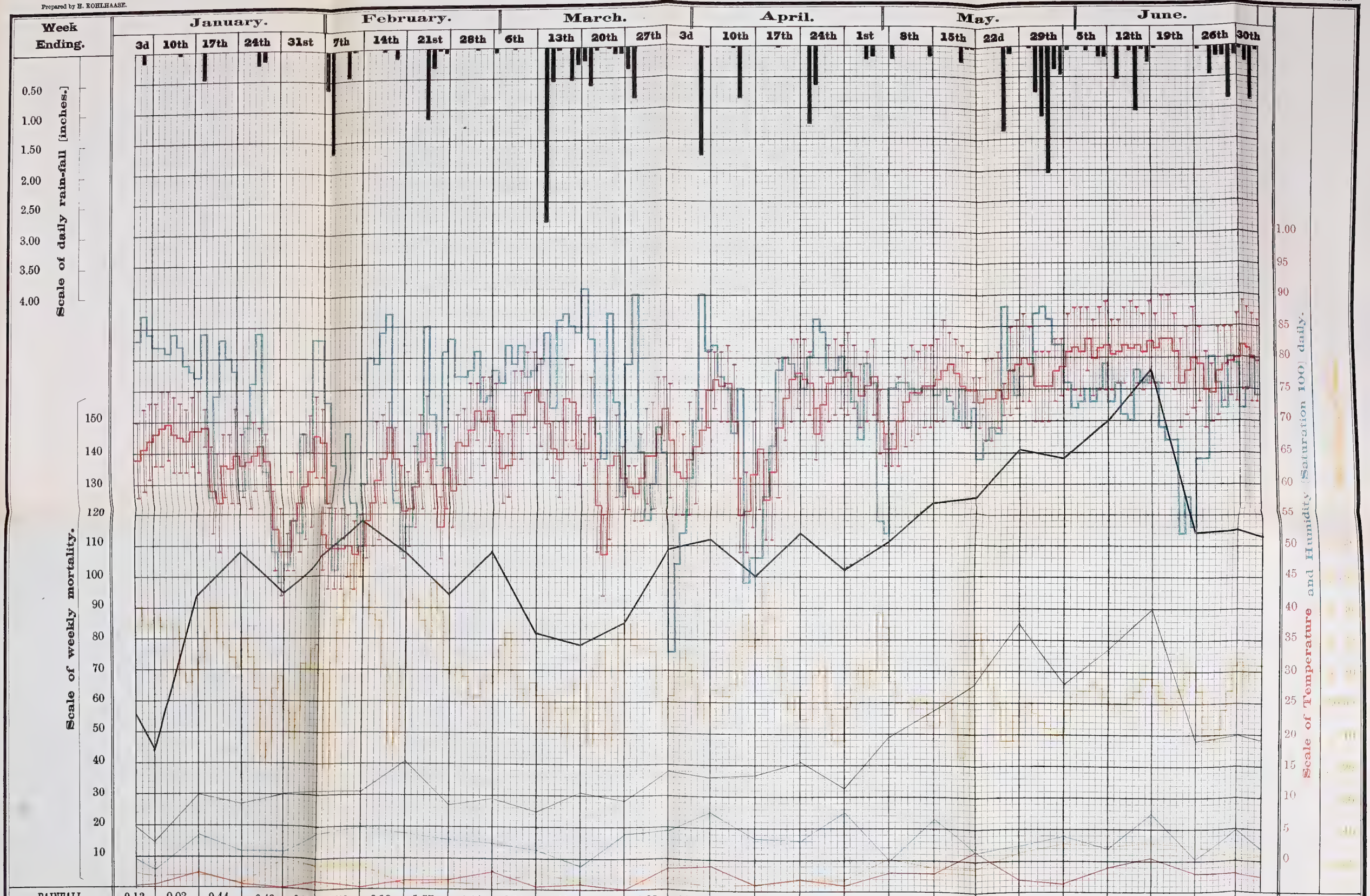
Zymotic diseases—Deaths from zymotic and epidemic diseases (small-pox, measles, scarlatina, typhus fever, typhoid fever, yellow fever, malignant or Asiatic cholera, diphtheria, whooping-cough), and from all diseases, with death rate per 1000 inhabitants, from epidemic and zymotic diseases, and from endemic diseases and from all diseases, in New Orleans, during a period of years, 1846–1881 ccc

CHART

Illustrating the COURSE of the TOTAL MORTALITY the MORTALITY of CHILDREN under five years of age,
and the CHIEF FATAL DISEASES in the CITY of NEW ORLEANS
DURING THE SIX MONTHS, ENDING JUNE 30th 1880.
With Meteorological Observations during the same period

Prepared by H. ROHLHAASE.

New Orleans Lithographing and Engraving Company 78 St. Charles Street.



RAINFALL.	0.13	0.03	0.44	0.42	0.00	2.76	0.19	1.57	0.01	0.10	4.23	1.20	1.22	1.79	0.84	0.02	1.88	0.40	0.38	0.27	1.49	4.81	0,50	1.91	0.02	1.96	1.12	TOTAL. 29.69
Mean Thermometer.	65.5	68.2	63.3	60,2	59.3	49.7	60.5	60.3	67.5	69.3	69,1	61.3	64.0	67.6	67.1	68.7	74.7	73.7	72.6	76,6	75.0	77.4	81.4	81.5	80.3	77.8	80.7	69.2
Mean Barometer.	30.26	30.17	30.18	30.02	30.10	30.21	30.12	30.27	30.06	30.09	29.97	30.05	30.12	30.05	30.11	30.14	29.97	30.12	30.00	29.96	30.02	29.94	30.03	30,03	30.04	29.98	30.13	30.07
Death rate per 1000 Population. Pop. 216.000 — TOTAL.	24.78	22.62	26.00	22.87	25.27	28.40	26.00	22.62	26.00	19.74	18.77	20.46	26.24	26.96	24.07	27.39	24.55	26.72	29.85	30.33	33.94	33.22	36.11	39.96	27.39	27.68	21.96	26.84
White.	23.71	19.94	21.58	20.60	22.56	22.89	25.15	17,33	21.93	15.04	14.71	17.66	21.25	25.52	23.54	26.49	22.56	24.73	24.20	26.49	28.12	28.78	31.72	38.52	22.89	23.22	21.30	23.43
Col'd.	27.73	30.10	38.31	29,19	32.84	43.78	30.10	37.40	37.40	32.84	30.10	28.28	40.14	31.93	25.54	30.10	30.10	31.93	45.61	41.05	50.17	45.61	48.35	43.78	40.14	40.14	31.96	36.35

MORTUARY.

The heavy black line in centre of Chart represents the Total Mortality from all causes.
The unbroken black line near bottom of Chart represents Total Mortality of Children under 5 years.
The blue line near bottom of Chart represents Mortality by Phthisis Pulmonalis.
The ochre line near bottom of Chart represents Mortality by Diarrhœal Diseases.
The crimson line near bottom of Chart represents Mortality by all Malarial Fevers.

METEOROLOGICAL.

The perpendicular bars at top of Chart show daily rain fall (in inches.)
The perpendicular bars in center of Chart show daily range of Temperature.
The irregular crimson line in centre of Chart shows average Temperature (daily.)
The irregular blue line in centre of Chart shows relative Humidity (daily.)
The irregular ochre line in centre of Chart shows mean barometric pressure (daily.)

INTRODUCTION.

MEASURES FOR THE PREVENTION AND ARREST OF ENDEMIC, EPIDEMIC, CONTAGIOUS AND INFECTIOUS DISEASES.

All facts and measures relating to the prevention of endemic, epidemic, contagious and infectious diseases, are of interest and importance to sanitarians, physicians and political economists.

Efforts to exclude and arrest contagious diseases possess peculiar value, when exerted in behalf of the inhabitants of some great commercial metropolis, like New Orleans, whose existence and prosperity are indissolubly bound up with those of the people living upon the banks of her great river, and within the bounds of the fertile plains of its mighty valley.

During the years 1880, 1881, 1882 and 1883, embracing the term of service of the author as President of the Board of Health of the State of Louisiana, the diseases which have most seriously engaged the attention of the health authorities have been SMALL POX and YELLOW FEVER, and it is of moment that a concise account should be rendered of the measures instituted for the prevention and arrest of these diseases.

SMALL-POX.

MEASURES INSTITUTED BY THE PRESIDENT AND OFFICERS OF THE BOARD OF HEALTH FOR THE ARREST OF SMALL-POX IN NEW ORLEANS, LOUISIANA, DURING THE YEARS 1880, 1881, 1882 and 1883.

In 1880, one case of small-pox occurred in the Third District, in the month of May; death resulted after transference to the Small-Pox Hospital.

The dwelling in which the case occurred was fumigated, and the inmates, as well as the inhabitants of the surrounding houses, were vaccinated.

The disease was arrested, and no other cases appeared, or were reported to the Board of Health during 1880.

New Orleans was seriously threatened with small-pox early in 1881, but owing to the prompt and vigorous measures of the Board of Health the danger of an epidemic was arrested for a time.

The first case of small-pox, in 1881, within the bounds of Louisiana, made its appearance January 11, with the arrival at the Mississippi Quarantine Station, of the emigrant steamship Nurnburg, from Bremen, having on board 85 crew and 173 passengers. The patient, a woman, and a steerage passenger, was attacked in mid-ocean. The presence of this case of small-pox on the steamship Nurnburg was telegraphed from the Quarantine Station by Dr. J. F. Finney to the President of the Board of Health. Orders were immediately issued for the transference of the patient and isolation in the Small-Pox Hospital; vaccine virus was dispatched; all on board were vaccinated, the officers, crew and passengers, by the Quarantine Physician. One hundred and one of the number vaccinated (257) took the vaccine disease, thus showing their susceptibility to the variolous poison.

The steamship Nurnburg was thoroughly cleansed and fumigated, and held at the Mississippi Quarantine Station for twenty-one days before being allowed to come to New Orleans.

The small-pox was arrested by these measures, and not a single case occurred at the Quarantine St ion on the vessel, or amongst her crew and passengers after her arrival.

The next case of small-pox occurred in the Parish Prison. As soon as it was manifested, the patient was isolated from other prisoners, every one of whom were vaccinated by order of the President of the Board of Health, and the prison was subjected to fumigation and cleansing, under the supervision of the Sanitary Inspector of the Board of Health for the Second District. The disease was arrested, and no other case occurred amongst the large number of prisoners confined in the Parish Prison.

The rule of the Board of Health with reference to the vaccination of school children was rigidly enforced.

The next case occurred in the month of February, on the twenty-third; and the third case nearly a month afterwards, on the twenty-second of April, and was brought to the city by the towboat McDonald. Cases were brought to the city from Grand Lake and Cincinnati, on the twenty-sixth, twenty-seventh and twenty-eighth of April.

All these cases were removed to the Small-Pox Hospital, and the premises were fumigated and the citizens in the infected localities were vaccinated.

One case was removed from the Bark Pablo to the Small-Pox Hospital on the first of May.

By measures instituted by the Board of Health, the disease was again completely arrested and stamped out, until the ninth of November, when a case was reported at the Charity Hospital, having come from Point Celeste, Plaquemine Parish, La.

One of the assistants of the Charity Hospital was attacked with it on the twenty-first; on the twenty-eighth a case was brought through quarantine concealed in the hold of the steamship Hutchinson, of the line controlled by Messrs. Charles A. Whitney & Co.

Six cases of Small-Pox were reported to the Board of Health in November and twelve in December.

Of the twenty-six cases reported in 1881, sixteen were transferred to the Small-Pox Hospital; six terminated fatally.

During the months of March and April every department in the public schools was visited, and the arms of the pupils carefully inspected. Those showing evidences of improper vaccination were directed to be revaccinated.

Dr. Joseph Holt, Inspector of the First District, alone, vaccinated 320 school children.

In the First District one case of small-pox was discovered on the Spanish bark Pablo Sinsat, at Post No. 33, head of Market street.

The patient, a sailor, was removed immediately to the Small-Pox Hospiral, and thorough and repeated disinfection and fumigation were enforced.

The crew had already been vaccinated, and they therefore escaped.

The first case of small-pox, in the Third District, occurred as early as the twenty-third of February, in the person of R. Rulet, white, residing on Tricou street, near the United States Barracks; the case was a light one, and the patient recovered. The second case reported was that of Charles Young, twenty-three years of age, white, residing at No. 5 Mandeville street.

These were the only cases which originated in the Third District.

In this district, as in all others, by order of the President of the Board of Health, the yellow flag was displayed upon every house in which a case of small-pox occurred; the neighbors were informed of the appearance of small-pox in their immediate vicinity, and vaccination and re-vaccination were advocated as the only prevention.

In all cases, not only the room, but the entire house, was fumigated.

During the entire year sixteen cases of small-pox were treated at the Hayes Hospital, in the Third District.

In the Fourth District the only case of small-pox reported during 1881 was a medical student who contracted the disease in the Charity Hospital, from which institution not less than nine cases were removed to the Small-Pox Hospital, the disease having been contracted in the Eastern, Western and Northern States.

This case occurred at 216 Josephine street, in a crowded locality, and was treated by the President of the Board of Health; the premises were fumigated and disinfected, and free vaccination was offered to every citizen.

No other case occurred or was reported in the Fourth District during 1881.

Owing to the prevalence of small-pox in the Northern, Eastern and Western States, the disease continued to be introduced into New Orleans in a continuous stream.

After its appearance in the cities, towns, villages and plantations along the Mississppi river, the number of cases increased as they were introduced, and at the same time the United States Government was without any hospital for the isolation and treatment of small-pox cases.

Early in 1882, the President of the Board of Health, after a careful inspection of the Small-Pox Hospital, urged the Board of Health to take the most vigorous means for the suppression of small-pox, and also urged similar measures upon the Common Council.

The response of His Honor, Mayor Shakspeare, was prompt, intelligent and humane.

In the able report of the Board of Health,drawn up by Drs. F. Formento, Chas. Turpin and J. C. Faget,many important measures were urged by the committee upon the Honorable Common Council ; such as the closure of the Small-Pox Hospital, on account of its location and bad management ; the erection of a suitable hospital for the treatment of contagious and infectious diseases, the proper isolation of patients, disinfection of clothing and bedding, the proper disposition of the dead, the employment of special wagons perfectly covered and cleansed for the conveyance of small-pox patients.

The action of his Honor the Mayor, Joseph A. Shakspeare, for the establishment of a Small-Pox Hospital, as well as the efforts of the Board of Health, were arrested by judicial proceedings.

The following is the record of the cases of small-pox and deaths in the different districts, classified by race, sex and month for the year 1882 :

CASES AND DEATHS OF SMALL-POX IN NEW ORLEANS IN 1882.

Classified according to the District in which they occurred—Color and Sex.

MONTHS.	First District.			Second Distr't.			Third District.			Fourth Distr't.			Fifth District.			Sixth District.			Seventh District			TOTAL.			SEX.		Number of Deaths.		
	W	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	M.	F.	W.	C.	Total
January	1	3	4	.....	3	3	3	3	6	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	5	9	14	9	5	1	5	6
February	.....	8	8	3	1	4	6	10	16	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	9	20	29	19	10	3	7	10
March	7	23	30	10	30	40	30	40	70	1	.....	1	4	4	8	....	1	1	.....	1	1	52	99	151	90	61	11	49	60
April	8	28	36	21	33	54	32	47	79	.....	1	1	3	6	9	.....	1	1	.....	.....	.....	64	116	180	107	73	24	48	72
May	10	19	29	17	37	54	35	67	102	1	.....	1	2	3	5	.....	3	3	.....	.....	.....	65	129	194	89	105	17	52	69
June	11	7	18	17	39	56	37	61	98	1	1	2	.....	10	10	1	.....	1	.....	.....	.....	67	118	185	87	98	22	47	69
July	3	4	7	12	9	21	10	13	23	6	4	10	....	6	6	.....	3	3	.....	.....	.....	31	39	70	40	30	13	18	31
August	.....	10	10	3	2	5	5	17	22	.....	1	1	5	4	9	.....	.....	....	.....	1	1	13	35	48	25	23	6	12	18
September	.....	3	3	1	3	4	5	14	19	.....	.....	....	2	4	6	.....	.....	.....	.....	.....	.....	8	24	32	13	19	1	14	15
October	.....	16	16	.....	1	1	5	20	25	1	.....	1	.....	1	1	.....	.....	.....	.....	1	1	6	39	45	20	25	1	15	16
November	7	13	20	.....	.....	.....	1	12	13	.....	3	3	.....	.....	.....	.....	.....	.....	.....	5	5	8	33	41	16	25	3	8	11
December	25	17	42	2	1	3	12	19	21	21	15	36	.....	.....	.....	.....	.....	.....	.....	2	2	60	44	104	50	54	14	24	38
	72	51	223	86	159	245	181	313	494	31	25	56	16	38	58	2	9	11	.....	10	10	388	705	1093	565	528	116	299	415

The Board of Health, as at present organized, has offered free vaccination during the years 1880, 1881, 1882, 1883.

The following data illustrate the operations of the Board of Health with reference to free vaccination performed by the Sanitary Inspectors of the Board of Health during the years 1881, 1882, 1883:

1881		
1882		1,370
1883		4,725
	First nine months	5,549
Total free vaccinations		11,644

Eleven thousand six hundred and forty-four citizens of New Orleans have been vaccinated free of charge by the Sanitary Inspectons of the Board of Health during the years 1881, 1882 and 1883, first nine months.

Each and every citizen of New Orleans has had the opportunity of free vaccination at the hands of the officers of the Board of Health.

In accordance with the organic acts of the Legislature of 1882, about one hundred and seventy physicians have registered at the office of the Board of Health up to July 1, 1883.

The physicians of New Orleans number at least 225, or about one physician to every 1000 inhabitants.

Without doubt a large number of vaccinations have been performed by the physicians of New Orleans, many of which have been gratuitous.

The six sanitary officers of the Board of Health have performed, during the present small-pox epidemic, 11,644 free vaccinations ; or an average of 1940 vaccinations to each inspector.

If the physicians of New Orleans had performed one-half the vaccinations, say about 1000 each, then they would amount to about 225,000.

We have no means of ascertaining the exact number of vaccinations, but from an inspection of the orphan asylums, houses of refuge, educational institutions and the Parish Prison in this city, conducted by the President of the Board of Health, during a period of fourteen days, May 31 to June 14, 1883, it was established :

1. That in the period mentioned not a case of small-pox existed in any of these institutions.

2. During the years 1882, 1883, only four cases appeared; two prisoners, one employe and one orphan were attacked by small-pox in the twenty-six institutions specified ; of these cases of small-pox, four in number, all recovered.

3. The President of the Board of Health ascertained, upon personal inspection, that every one of these inmates of these twenty-six institutions had been vaccinated by the appointed physicians.

4. Amongst four thousand three hundred and thirty-five inhabitants of the various charitable institutions of New Orleans, only one in one thousand and eighty-three suffered from small-pox, and not one died during 1882 and 1883.

5. The escape of these citizens and inmates of the charitable institutions of New Orleans, was due to the faithful performance of vaccination by the physicians of New Orleans.

It is but fair to conclude that the physicians of New Orleans have been equally faithful in vaccinating the families under their charge.

We conclude further, that the vast proportion of the population of New Orleans has been properly and thoroughly vaccinated by the medical profession.

Small-pox has been confined chiefly to the negro race and to the destitute whites.

This conclusion is shown by the large number of deaths reported by the coroner, these victims of this foul pestilence having perished without medical attendance.

Shortly after the organization of the Common Council, in accordance with the provisions of the charter granted by the General Assembly of 1882, the sanitary necessities of New Orleans were urged by the President of the Board of Health upon this body, in accordance with the organic acts of the General Assembly of 1855, 1858, 1870, 1877 and 1882.

The subject of small-pox and its isolation, the necessity of regulating funerals, the erecttion of a small-pox hospital and all similar subjects, were urged, but without avail, upon the attention of the Mayor and Common Council.

The labors of the Board of Health have been fully recorded in the report to the General Assembly of 1882 and the first six months of 1883.

CASES OF SMALL-POX REPORTED TO THE BOARD OF HEALTH.

January 1 *to September* 30, 1883, *classified according to Districts in which they occurred.*

MONTHS.	1st District.			2d District.			3d District.			4th District.			5th District.			6th District.			7th District.			TOTAL CITY.		
	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total
January	37	56	93	18	30	48	23	18	41	17	23	40	2	....	2	5	3	8	1	5	6	103	135	238
February	34	50	84	37	42	79	38	51	89	14	18	32	2	2	4	7	5	12	1	9	10	133	177	310
March	52	65	117	75	104	179	97	110	207	40	18	58	5	9	14	27	10	37	....	7	7	296	323	619
April	63	74	137	84	110	194	117	180	297	32	18	50	9	25	34	34	21	55	1	2	3	340	430	770
May	41	62	103	41	61	102	105	97	202	25	13	38	16	54	70	11	4	15	....	1	1	239	292	531
June	13	67	80	16	41	57	31	69	100	18	12	30	35	44	79	10	4	14	....	1	1	123	238	361
July	17	27	44	12	10	23	12	11	23	21	11	32	15	15	30	10	14	24	1	....	1	89	88	177
August	6	14	20	8	18	26	10	5	15	22	11	33	3	30	33	4	6	10	6	....	6	59	84	143
September	5	9	14	6	9	15	3	4	7	3	5	8	1	23	24	..	..	..	2	2	4	20	52	72
	268	424	692	298	425	723	436	545	981	192	129	321	88	202	290	108	67	175	12	27	39	1402	1819	3221

DEATHS BY SMALL-POX

From January 1, 1883, *to October* 1, 1883.

W.	C.	TOTAL.
24	52	76
48	83	131
72	149	221
102	159	261
80	95	175
53	96	149
44	40	84
31	36	67
12	29	41
466	739	1205

DEATHS BY SMALL-POX CLASSIFIED AS TO DISTRICTS.

MONTHS.	1st District.			2d District.			3d District.			4th District.			5th District.			6th District.			7th District.			TOTAL.			In Hospital.
	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	
July	11	17	28	7	7	14	5	3	8	5	2	7	12	8	20	3	3	6	1	.....	1	44	40	84	17
August	5	14	19	6	6	12	5	1	6	9	5	14	3	9	12	1	1	2	2	.....	2	31	36	67	12
September	3	8	11	5	9	14	2	.....	2	1	.....	1	.....	11	11	.....	.....	.....	1	1	2	12	29	41	6
	19	39	58	18	22	40	12	4	16	15	7	22	15	28	43	4	4	8	4	1	5	87	105	192	35

The labors performed under the direction of the President of the Board of Health for 1883 by the sanitary inspectors are fully unfolded in the following reports :

OFFICE SANITARY INSPECTOR, FIRST DISTRICT,
New Orleans, October 15, 1883.

Joseph Jones, M. D., President Board of Health :

Sir—In the daily papers of late, as well as in the proceedings of the New Orleans Auxiliary Sanitary Association on the eleventh instant, the small force of the Board of Health available for sanitary purposes has been much dwelt upon, and especially so in connection with the stamping out of small-pox in this city. I would like to take advantage of this opportunity to say a few words in behalf of the officers of your honorable Board, and assert that it is no fault of theirs that small-pox still lingers in our midst, and that the force is an efficient one, and does all in its power.

It is certainly true that in an epidemic, as in the past winter months, the available force of sanitary policemen is taxed to the utmost, but not to such an extent as might be inferred or commonly believed.

The trouble is not that these men cannot attend to an epidemic, but in addition to the regular house-to-house inspections, and the latter work is usually deferred to a more favorable opportunity, complaints may be attended to which comprise any serious nuisances.

In the First District, for instance, two officers looked after small-pox, and one officer to nuisances in general. The force was, therefore, adequate for all practical purposes. A large force is not necessary in any district to attend to infectious and contagious diseases, even when very prevalent. What is essential, is that the force be composed of conscientious and trustworthy men—one good man is worth a dozen poor ones. This city may never have such a metropolitan force as New York boasts of, and be able to station a policeman on every infected square to prevent ingress to or egress from flagged houses ; nor is that necessary, in my opinion, provided that the men are competent. I have been connected with the Board of Health of this city and State for the past eight years, and the present organization of the inspectors and policemen is as thorough and reliable as any I have known. I will illustrate my remarks by mentioning the labors of officers E. Bohner and Geo. Zeller, during the past nine months of the present year.

The work of looking after small-pox and attending to complaints was placed in their hands, and I was never disappointed in the trust. The fact of so little complaint concerning the disease at our hands, appearing in the reporters' columns of the papers, is self-evident, and sufficient to support my views. These officers kept every infected house under surveillance after flagging, and in this way discovered concealed cases repeatedly, and also cases not reported by the attending physician. The disease was followed up closely, and known in the district as on a map, every infected premise was thoroughly disinfected and the rooms fumigated, at the earliest moment, and the bedding and covering and wearing apparel either destroyed on the spot or conveyed to the vicinity of the Small-Pox Hospital on Hagan Avenue, and there burned. Cases not properly isolated, or in attendance of a physician, were sent to the hospital. This was often done at the risk of these men, as friends and relations would often object. In a very few instances did the disease re-occur after fumigation and disinfection, unless the case occurred in a tenement house, where many families lived in adjoining rooms. The disease has been stamped out in one locality after another, until it is about extinct in this district. I have made it a rule to order the owners of tenement houses so infected, to have them whitewashed throughout, including the outstanding wood-work. What is said for the First District applies to the others. It is a common thing for our officers to act as pall-bearers and pseudo-undertakers for the poor, forsaken wretches dying of this disease. The public, of course, is unaware of the extra exertions to stamp out the disease in any locality. I have held the opinion always that removal to the hospital stamps out the disease in any locality even more effectually than vaccination, with less danger of its subsequent spread. In answer to your communication of the thirteenth instant, I will give a table of the work done in this district since the beginning of the year. I may add, that vaccination has been offered to persons residing in the neighborhood of small-pox cases, but with indifferent success. Nothing short of compulsory laws will ever accomplish the purpose.

Yours respectfully,

R. A BAYLEY, M. D.,
Sanitary Inspector, First District.

[Table Attached.]

Table showing the statistics of small-pox in the First District since January 1, 1883, to date, including inspection work, etc.:

No. of cases of small-pox	640
No. of cases sent to hospital	167
No. of deaths from small-pox	186
No. of cases after fumigation	54
No. of premises fumigated	532
No. of premises disinfected	532
No. of premises where clothing was destroyed	132
No. of house-to-house inspections	8742
No. of re-inspections	5481
No. of nuisances abated	2100
No. of vaccinations	650
No. of vaccination certificates	875

OFFICE SANITARY INSPECTOR, SECOND DISTRICT,
New Orleans, La., October 18, 1883.

Joseph Jones, M. D., President Board of Health:

Sir—I respectfully submit this report on the subject of small-pox, in answer to your communication of the thirteenth inst., on the following questions:

1. Number of cases of small-pox which have occurred in your district from January 1, 1883, to October, 1883: 586 cases of small-pox; 225 whites, 361 colored, have been reported to this office, or found out by the sanitary officers and police.

2. Number of deaths 342; 107 whites and 165 colored, giving a percentage of more than one death to two of cases reported, showing that there is a great neglect in reporting of cases on the part of physicians, and also that many cases are treated without physicians, in order to escape being reported.

3. Number of premises, rooms, etc., fumigated for small-pox: 345 premises were fumigated for small-pox.

4. Mode of dealing with small-pox, etc.: when a case of small-pox is reported to this office or found out, a yellow flag is immediately nailed to the house occupied by the patient. This is the best practical means of isolation, and also warns the neighborhood to provide themselves with vaccination at the earliest moment. This vaccination is offered by us to all infected localities and neighborhood where small-pox exists.

5. Number of cases sent to hospital: only those are sent who are willing to go, or have no person to take care of them; ten were sent to the Small-Pox Hospital.

Give number and a detailed statement of your efforts to suppress small-pox in your district; also number of vaccinations from January, 1883, to October, 1883.

When cases are reported well, or when scabs have fallen off, the premises are thoroughly fumigated, and the clothes which have been used by patient washed in boiling water, and sometimes burnt, with the consent of their owners.

The number of cases reported is so much greater than that of fumigations because, as a rule, many cases occur in the same localities; as an instance, thirty-one cases occurred in four houses on St. Peter street. I vaccinated from January to October, 1883, 1548 persons, 909 whites and 639 colored; 1040 were secondary, and 508 primary, 563 were vaccinated at the office of the Board of Health and 965 at their homes and public institutions.

There were no applications for certificates of vaccination this year.

Three thousand three hundred and thirty house-to-house inspections from January to October 1883; 1195 nuisances were abated.

Respectfully yours,

C. FAGET, M. D.,
Sanitary Inspector, Second District.

SMALL-POX IN SECOND DISTRICT.

No. of cases of Small-Pox in the Second District from January 1, 1883, to September 30, 1883.

January.		February.		March.		April.		May.		June.		July.		August.		September.		TOTAL.		Total W. & C.
W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	
11	30	36	41	69	82	65	76	43	57	16	40	10	10	6	16	9	9	225	361	586

DEATHS FROM SMALL-POX FROM JANUARY 1, TO SEPTEMBER 30.

JAN.		FEB.		MARCH		APRIL.		MAY.		JUNE.		JULY.		AUG.		SEPT.		TOTAL.		Total W. & C.
W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C	W.	C.	W.	C.	W.	C.	
.....	11	11	18	23	36	27	38	17	21	10	20	8	7	6	6	5	8	107	165	342

PERSONS VACCINATED FROM JANUARY 1, 1883, TO SEPTEMBER 30, 1883.

JAN.		FEB.		MARCH		APRIL.		MAY.		JUNE.		JULY.		AUG.		SEPT.		TOTAL.		Total W. & C.
W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	
52	119	193	134	306	187	278	142	39	22	10	12	12	10	9	7	10	6	909	639	1548

NUMBER OF PREMISES FUMIGATED FOR SMALL-POX.

JAN.	FEB.	MARCH	APRIL.	MAY.	JUNE.	JULY.	AUG.	SEPT.	TOTAL.
14	38	64	64	62	44	28	20	11	345

Number of cases of small-pox sent to Small-Pox Hospital from January 1, to September 30, 1883, 10.

OFFICE SANITARY INSPECTOR, THIRD DISTRICT,
New Orleans, October 14, 1883.

Joseph Jones, M. D., President Board of Health:

Sir—In compliance with your communication of the thirteenth inst., I beg leave to report as follows, to the data contained.

1. From January 1, 1883, to October 13, 1883, 887 cases of small-pox have been recorded at the office: 463 males and 424 females; 443 white, 444 colored; 348 adults over sixteen years of age and 539 children under sixteen years of age. For further particulars please see Table 1 accompanying this report.

2. The total number of deaths from that disease in the Third District during the same length of time is 284; whites 149, colored 135; please see Table 1.

3. 2059 rooms were fumigated and 877 premises were disinfected, (See Table 2).

4. As regards the mode of dealing with small-pox, the isolation, disinfection and fumigation of premises and transfers to hospital, we have conformed to the rules and orders given by the President of the Board of Health, viz: As soon as a case was reported at our office, our inspector made it his duty to visit the patient at once in order to ascertain for himself the reality and severity of the case; this being done the yellow flag was immediately displayed, free vaccination offered and urged as much as possible to the occupants of the infected house, strict orders given to prevent visitors from entering the premises, free vaccination offered to all neighbors, warnings given as to the dangers of attending the disease and advice given for their protection against the malady.

At the termination of each case, the house where the case had occurred was thoroughly fumigated with sulphur for at least four hours; all articles that served for the patients during illness were either destroyed or boiled for at least twelve hours in a solution of carbolic acid, privies were ordered emptied and notice served to that effect; the premises thoroughly disinfected with a solution of copperas and carbolic acid. It may be well to state here that your inspector and his sanitary officers, Messrs. J. Nowell and H. F. Evans, also during six weeks, Messrs. Taylor and Wittie, officers of the city police, who were detailed to the Board of Health during that time, are the only persons who have attended to the enforcement of the rules and regulations of the Board of Health in regard to small-pox in the Third District.

All cases that were not attended by a regularly practicing physician or where their management was bad, were sent to the hospital in the charity wagons in charge of the city.

5. Thirty-five cases were sent to the hospital by our special order, ten whites, and twenty-five colored.

Quite a number of cases of small-pox having at their own request been transferred to the hospital (we do not count this in our total thirty-five), having already given in section four a detailed statement of our efforts to suppress small-pox, I will, nevertheless, put to account several reports on the management of the Luzenburg Hospital. which probably have had something to do with the closure of this establishment, the largest focus of infection and contagion in the city.

It may be well to state here that on the twenty-sixth day of September, 1883, accompanied by Mr. A. De Fonblanque, British Consul, and my officer, Mr. J. Nowell, a general and thorough inspection of the hospital was made by your inspector. All articles of bed-clothing, wearing apparel, curtains etc., belonging to the patients that were soiled or could carry contagion were set apart and burnt the following day by the officers under my supervision.

All the wards, public and private, the apartments of the late Dr. Hayes, the kitchen, washing-rooms, were thoroughly fumigated and disinfected; the privies were first thoroughly disinfected and then notice to have them emptied given and served.

6. Total number of house-to-house inspections from January 1, 1883 to October 13, 1883, 7023. For further particulars please see Table 2.

7. Total number of persons vacinated during the same length of time, 1069.

8. Total number of nuisances abated since January, 1872. For particulars see Table Number 2.

9. It is impossible for me to give a definite and correct account of the number of certificates issued to school children, as I have kept no memoranda of those given, but I may, however, safely say, from 250 to 300 such certificates were given by me since January 1, 1883; all of which is most respectfully submitted.

EUG. J. MIOTON, M. D.,
Sanitary Inspector, Third District.

TABLE 1.

SHOWING NUMBER OF CASES OF SMALL-POX

From January 1 to October 13, 1883, in the Third District.

MONTHS.	Males.	Females.	Whites.	Colored.	Adults.	Children.	Recovered.	Died.		Sent to Hospital.		Number of Rooms Fumigated.	Premises Disinfected	Total Cases	Remarks.
								W.	C.	W.	C.				
January	16	15	21	10	16	15	23	8	....	....	....	75	31	31	
February	36	37	38	35	53	40	51	12	10	1	2	141	73	73	
March	112	103	107	108	92	123	160	21	34	5	12	302	215	215	
April	126	103	104	125	73	156	150	38	41	....	5	514	229	229	
May	92	95	104	83	77	110	135	27	25	2	2	475	187	187	
June	53	44	36	61	35	62	45	30	22	1	3	304	97	97	
July	17	12	18	11	11	18	21	6	2	....	....	165	29	29	
August	4	10	10	4	8	6	8	5	1	1	1	62	14	14	
September	7	2	4	5	2	7	7	2	....	....	....	19	9	9	
October	....	3	1	2	1	2	3	....	....	....	....	2	3	3	3 cases on hand Oct. 13, 1883.
Total	463	424	443	444	348	539	603	149	135	10	25	2059	887	887	

TABLE 2.

HOUSE-TO-HOUSE INSPECTION.

Premises inspected	7023	No. of squares disinfected	110
Premises occupied—whites	3399	No. of premises disinfected	887
Premises occupied—colored	1326	No. of rooms fumigated	2059
Nuisances abated	1872	No. of persons vaccinated	1069

E. J. MIOTON, M. D., Inspector.

OFFICE SANITARY INSPECTOR, FOURTH DISTRICT,
New Orleans, October 18, 1883.

Joseph Jones, M. D., President Board of Health:

Sir—I herewith submit the following report of small-pox in the Fourth District from January 1883, to October, 1883.

The method adopted to prevent the spread of this disease has been that so urgently recommended by yourself.

As soon as notified of a case of small-pox, the house is immediately flagged in a conspicuous place, and the case isolated as much as possible; free vaccination is offered to all persons within a radius of four squares. In case of death all gatherings around the body were prohibited, and also large attendance at the funerals.

The rooms were thoroughly disinfected by burning sulphur for from ten to twelve hours. The vaults are emptied and disinfected with sulphate of iron and carbolic acid. The rooms are white-washed, and when practicable, bedding and clothing were destroyed.

Free vaccination was offered to several colored congregations, but they declined to avail themselves of the opportunity.

During the past two months but few persons have presented themselves for vaccination at this office.

Small-pox cases were only transferred to the Small-Pox Hospital, when found to be in want; of these there were twenty-nine.

As a rule, they object strongly to being sent to the hospital; they consider it death.

At the present time, we have not a single case of small-pox in the Fourth District.

Very Respectfully,

W. R. MANDEVILLE, M. D.,
Sanitary Inspector, Fourth District.

SPECIAL REPORT

OF

W. R. MANDEVILLE, M. D., SANITARY INSPECTOR, FOURTH DISTRICT,

From January 1, to October 13, 1883, on Small-Pox.

Number of cases	326
Number of deaths	99
Number of premises fumigated	225
Number of rooms fumigated	573
Number of yellow flags displayed	225
Number of cases sent to hospital	29
Number of house-to-house inspections	4906
Number of nuisances abated	1425
Number of free vaccinations	663
Number of certificates issued	698

W. R. MANDEVILLE, M. D.,
Sanitary Inspector, Fourth District.

New Orleans, October 16, 1883.

OFFICE SANITARY INSPECTOR, FIFTH DISTRICT,
New Orleans, October 13, 1883.

Joseph Jones, M. D., President Board of Health;

Sir—I respectfully submit herewith my report from January to October, 1883:

Enclosed is a tabulated report of cases of small-pox in the Fifth District, with the number of deaths, etc., as requested by the Honorable President of the Board of Health; also a statement of the efforts to suppress small-pox in the Fifth District, isolation, disinfection, fumigation, etc., yellow flags and cases sent to the hospital.

I herewith state that as much as it was in my power to prevent gatherings at funerals or communication, from house-to-house where there was a case of small-pox, I have done so; among the white class I was able to make them understand the necessity of such a measure, to prevent the spread of the disease, but with the negroes it was nearly useless, as they will not understand.

I will also state, that in every house where there was a case of small-pox reported, a yellow flag was exhibited on the house visited by me, and if there was no physician in attendance or nurse, or unable to be provided for, the case was sent by me to the hospital. I have thus sent, as the report will show, four whites and nineteen colored; total twenty-three.

I will state, that in every house where a case of small-pox has been, the premises were entirely disinfected by sulphur and carbolic acid, the privy ordered to be cleaned and free vaccination offered, but in many cases refused. I have also destroyed in thirty-two premises, bedding, and clothing, etc.

Enclosed herewith is also a statement of house-to-house inspections, and total number of nuisances abated from January 1 to October 13, 1883; also a table, showing free vaccination in the Fifth District.

Very respectfully, your obedient servt,

A. M. BERET, M. D.,
Sanitary Inspector, Fifth District.

TABLE 3.

FROM JANUARY 1 TO OCTOBER 13, 1883,

Showing Number of Cases of Small-Pox in Fifth District.

MONTHS.	No. of Cases		No. Sent to Hospital.		Flags.	Died.		No. of Rooms Fumigated	No. of Premises Disinfected
	W.	C.	W.	C.		W.	C.		
January	2	.....	1	.....	2	.....	.....	4	2
February	3	1	1	.....	4	.....	.....	10	4
March	6	7	1	3	3	.....	.....	24	13
April	9	25	3	8	31	.....	4	60	31
May	15	55	8	15	59	3	1	120	59
June	35	44	10	16	67	.....	7	148	67
July	27	25	3	6	29	1	2	71	32
September	1	2	1	1	18	.....	1	30	18
October	1	4	.....	1	4	.....	1	14	4
Total	116	206	39	66	259	4	19	520	259
Grand total	322		105		259	23		520	259

A. M. BERET, M. D.,
Sanitary Inspector, Fifth District.

Nuisances abated ..... 595 | Inspections made 2425

Total vaccinations—white 78
Total vaccinations—colored 321
Total certificates given 69

Grand Total Vaccinations 399

OFFICE SANITARY INSPECTOR SIXTH AND SEVENTH DISTRICTS,
New Orleans, October 15, 1883.

Joseph Jones. M. D., President Board of Health:

Sir—I respectfully submit to you the following report of the sanitary condition of the Sixth and Seventh Districts, commencing January 1, 1883, and ending October 13, 1883;

Cases of small-pox in both districts	whites	117
	colored	87
Cases sent to hospital	whites	7
	colored	22
Deaths,	whites	33
	colored	27
Recovered,	whites	77
	colored	38
Persons vaccinated,	whites	497
	colored	723
Certificates issued		835
Number of premises where small-pox existed		139
Premises disinfected and fumigated		221
Rooms disinfected and fumigated		491

At all places where small-pox existed we placed a yellow flag on the premises, in conspicuous positions, so as to warn the people of the existence of this disease. The surrounding neighborhood was visited, and free vaccination offered to all the citizens.

Isolation was made as complete as possible; houses were fumigated with burning sulphur, which was left in the room from ten to twelve hours.

Patients were transferred to the Small-Pox Hospital in public wagons, provided for that purpose. Circulars containing the instructions of the Board of Health in regard to cleanliness, etc., were distributed freely; also disinfectants were distributed free.

We have visited house-to-house and solicited vaccination. In cases where it was impossible to isolate, I sent them immediately to the hospital.

Total nuisances abated, 545; inspections and re-inspections, 7981.

This work has been accomplished with only one officer, who has to leave one district for the other in case of an emergency, and there is very much valuable time lost in so doing. I also forward you a complete report of sanitary work in the Sixth and Seventh Districts, from January 1, 1883, to October 13, 1883.

I am, respectfully, yours,

WM. RYAN, M. D.,
Sanitary Inspector Sixth and Seventh Districts.

HOUSE-TO-HOUSE INSPECTION IN THE SIXTH DISTRICT,

From January 1, *to October* 13, 1883.

Premises inspected		2695
Number of persons occupying premises—white	5440	
Number of persons occupying premises—colored	1559—6999	
Inspections made	3761	
Re-inspections	561—4322	
Nuisances abated		465
Premises disinfected		200
Premises fumigated		200
Rooms fumigated and disinfected		429
Number of cases of small-pox—white	110	
Number of cases of small-pox—colored	10— 170	
Number of premises where small-pox existed		127
Number of cases sent to hospital—white	7	
Number of cases sent to hospital—colored	15— 22	
Number of deaths from small-pox—white	28	
Number of deaths from small-pox—colored	18— 46	
Number recovered from small-pox—white	75	
Number recovered from small-pox—colored	27— 102	
Persons vaccinated—white	344	
Persons vaccinated—colored	389 —733	
Number of certificates issued		531

WM. RYAN, M. D.,
Sanitary Inspector, Sixth District.

HOUSE-TO-HOUSE INSPECTION IN THE SEVENTH DISTRICT,

From January 1, *to October* 13, 1883.

Premises		987
Persons occupying same—white	1826	
Persons occupying same—colored	2479—4305	
Inspections made		3571
Re-inspections made		88
Nuisances abated		80
Premises disinfected		21
Premises fumigated		21
Rooms fumigated		62
Cases of small-pox—white	7	
Cases of small-pox—colored	27 —34	
Number of premises where small-pox existed		12
Number of cases sent to hospital—colored		7
Number of deaths—white	5	
Number of deaths—colored	9— 14	
Recovered—white	2	
Recovered—colored	11— 13	
Vaccinated—white	153	
Vaccinated—colored	339— 492	
Certificates issued		324

WM. RYAN, M. D.,
Sanitary Inspector Sixth and Seventh Districts.

From the preceding reports of the Sanitary Inspectors of the Board of Health of the State of Louisiana we obtain the following general results as to the operations, designed more especially for the arrest of small-pox.

In the First District 640 cases of small-pox, with 186 deaths, were reported; 167 cases of small-pox were sent to the Small-Pox Hospital.

532 premises were disinfected and fumigated; clothing and bedding destroyed in 132 premises.

The inspections and re-inspections numbered 14,223; and 2100 nuisances were abated; the vaccinations numbered 650, and 875 certificates were issued.

Vaccination has been freely offered to all persons in the vicinity of small-pox cases.

By the energetic measures instituted by Dr. Bayley the small-pox has been extinguished in the First District of New Orleans.

In 1880, the population of the First District was: white, 43,319; colored, 14,126; total, 57,445.

At the present time, the population of this District is not less than 60,000, and it probably includes within its area, more wealth engaged in

commercial and mercantile pursuits than in all the other Southern cities, exclusive, perhaps, of Baltimore.

But one case in the entire First District, October 24, 1883.

Second District—586 cases of small-pox; 225 white and 361 colored; 342 deaths; 167 whites 165 colored.

345 premises fumigated; 10 cases sent to hospital; vaccinated 909 whites and 639 colored; total 1548; 4297 house-to-house inspections, and 1195 nuisances abated.

Third District—887 cases small-pox; whites 443, colored 444; deaths 284; whites 149 and colored 135; 2059 rooms were fuminated, 887 premises disinfected; 35 cases small-pox sent to hospital; 7023 house-to-house inspections; vaccinations 1069; nuisances abated 1873. Only three cases of small-pox in this District at present time, October, 1883.

Fourth District—At the present time not a case of small-pox in this District; total number of cases 326; deaths 99.

Premises fumigated, 224; number of rooms fumigated, 573; yellow flags displayed, 225; cases sent to hospitel, 29; house-to-house inspections, 4006; nuisances abated, 1425; number of vaccinations, 663; certificates issued, 638.

Fifth District—cases small-pox, 322; whites 206, colored 116; deaths 105; whites 66, colored 39; number of flags 259, sent to hospital, 19 whites and 4 colored; total, 23; rooms fumigated, 540; premises disinfected, 259; house-to-house inspections, 3840; nuisances abated, 595; total vaccinations, 399; certificates issued 69.

Sixth and Seventh Districts—Cases of small-pox, 204; white 117, colored 87; sent to hospital 29; deaths, white 33, and colored 27; total 60; certificates issued, 835; vaccinations, white 497; colored 723; premises fumigated, 491; nuisances abated 545; inspections 7981.

From the preceding facts we deduce the following conclusions:

1. Small-pox has been arrested in New Orleans by the measures devised and executed by the Board of Health of the State of Louisiana.

2. In the efforts to isolate and arrest small-pox during 1881, 1882 and 1883, the main difficulties were due to the following causes:

a. The large number of colored inhabitants and poor whites, who disregarded and refused vaccination.

b. The fact that the prevalence of the disease was due chiefly to filthy habits and neglect of vaccination is conclusively shown by the large number of deaths reported by the coroner.

c. The constant introduction of the disease by strangers from the surrounding States and cities.

3. If the statistics be carefully examined it will be seen that the most marked increase of the disease was concurrent with the movement of the great staples of the valley and the congregation of large masses of people in this city from surrounding States.

The decrease of small-pox during the hottest months was due to the efforts of the officers of the Board of Health at a time when commerce and trade was at the minimum.

4. The small-pox increased in proportion to the prevalence of the disease in surrounding States and cities and on the plantations along the banks of the Mississippi River.

5. New Orleans will be perpetually exposed to the introduction of small-pox when the disease prevails in the Mississippi Valley.

6. The entire subject of small-pox and vaccination in Louisiana is of paramount importance and should engage the earnest attention of the General Assembly at its next regular meeting in June, 1884.

The preceding report was read at the regular meeting of the Board of Health of the State of Louisiana, October 25, 1883.

VIEWS OF HON. I. N. MARKS.

Mr. Marks reviewed at length the efforts of the Board of Health for the suppression of small-pox, and called attention to the vast amount of valuable sanitary work performed by the medical officers in the various districts.

The free vaccinations performed by the sanitary inspectors had reached 11,644, and had conferred great benefits upon the citizens; and if persons had neglected vaccination in New Orleans it was not the fault of the Board of Health, for vaccination had been offered freely to all citizens, irrespective of color, race or present or previous condition.

If each physician had accomplished only one-half the work performed by each sanitary inspector of the Board of Health, then we should have had, as shown by the President, at least 225,000 vaccinations.

The assertions emanating from the executive committee of the New Orleans Auxiliary Sanitary Associations were incorrect; every measure,such as the use of small-pox flags, the erection of small-pox hospitals, the conveyance of the sick in wagons devoted specially to this purpose, the isolation of the sick, and the prevention of gatherings at funerals, had been urged, and as far as the means of the Board extended, been exerted by the faithful and zealous officers of the Board of Health from the first appearance of small-pox in 1881.

These remarks, he said, were made because the step lately taken by the Auxiliary Sanitary Association and the appointment by that association of a number of physicians to inspect the various residences and vaccinate all persons not vaccinated, seemed to lead to the impression that the board had not done its duty. The Sanitary Association had appropriated $5000 for that purpose, and begain their labors at the present time, when there is no necessity for such action, for, by referring to the mortuary reports, it will be seen that during the past two weeks only six deaths had occurred by small-pox, and these at the small-pox hospital, showing that there had been no deaths in private practice of physicians. The board and its officers had done their duty, as their reports showed, and that the work done by the sanitary inspectors has met with its just reward by the arrest of small-pox in the city, and deserves commendation on the part of the people.

The following resolutions were offered by Mr. Booth, and adopted:

Resolutions of Hon. Edward Booth with reference to the efforts of the officers of the Board of Health of the State of Louisiana for the suppression of small-pox in New Orleans.

Resolved, That the board have heard read with profound satisfaction the report of its President, giving an outline of its labors and the detailed reports made by Drs. Bayley, Faget, Mioton, Mandeville, Beret and Ryan, respectively medical inspectors of the seven districts of the city, upon the subject of small-pox.

1. As to the methods adopted for its isolation and suppression.
2. As to the difficulties encountered and overcome.
3. As to the enormous amount of careful and systematic work done, and finally the abundant success which, under Providence, has crowned their labors, by a reduction of the weekly mortuary of small-pox from a maximum

of 86 for week ending April 7, 1883, to the present minimum of three for week ending October. 20, 1883, a point which has not been reached since November, 1882.

Resolved, That the board recognize the impossibility of forecasting what the future may have in store for our people, but will not refrain from congratulating the community upon the substantial cessation of small-pox, as well as the entire absence of any form of contagious or infectious disease.

Resolved, That the President and medical staff of the board have merited, and are hereby tendered, at the close of the season, the thanks of the people, as far as the board can express them, and are requested to continue their well-begun work for the absolute eradication of small-pox, trusting for their reward to the appreciation of the beneficiaries, and remembering the appositeness of the maxim that "nothing succeeds like success."

Resolved, That the President be and is hereby authorized and requested to embody in his annual report to the General Assembly of Louisiana the valuable and important facts reported by the medical inspectors, and to make such other use of the same as he shall deem to be for the public interest.

The number of cases of small-pox reported to the Board of Health of the State of Louisiana, during the year 1883, was whites, 1475; colored, 1891; total cases, whites and colored, 3366. The number of deaths from small-pox in New Orleans, during 1883, was whites, 493; colored, 773; total, whites and colored, 1266; the percentage of deaths among whites, was 29.8; among the colored, 24.4; whites and colored, 26.5. The ratio of mortality was without doubt much less, as a large number of the cases were not reported, the failure to report the cases to the Board of Health was attributable in many cases to the poverty of the sick, and the absence ot medical attendance. Thus, during the year 1882, 139 deaths from small-pox were reported by the coroner; twenty-one whites and 118 colored. The full significance of this statement is, that during the year 1883, one hundred and thirty-nine persons died of small-pox in New Orleans, who were unable to procure the services of a physician, and that if the deaths be rated as being about one sixth of all the cases of varioloid and variola, then 824 cases which recovered among the poorest citizens received no medical attendance and were consequently not reported.

In the following table, the cases and deaths from small pox reported in New Orleans during 1883, are classified according to districts, months, and races:

CASES AND DEATHS BY SMALL-POX FROM JANUARY 1, 1883, TO DECEMBER 31, 1883.

Months.	First District.						Second District.						Third District.						Fourth District						Fifth District.						Sixth District.						Seventh Dist.					
	Cases.			Deaths.			Cases.			Deaths.			Cases.			Deaths.			Cases.			De'ths			Cases.			De'ths.			Cases.			De'ths			Cases.			De'ths		
	w.	c.	Tot'l.	w.	c.	Tot'l.	w.	c.	Tot'l.	w.	c.	Tot'l.	w.	c.	Tot'l.	w.	c.	Tot'l.	w.	c.	Tot'l.	w	c.	Tot'l.	w.	c.	Tot'l.	w	c.	Tot'l.	w.	c.	Tot'l.	w.	c.	Tot'l.	w	c.	Tot'l.	w	c.	Tot'l.
Jan.	37	56	93	9	17	26	18	30	48	...	11	14	23	18	41	9	13	22	17	23	40	4	9	13	2	...	2	1	..	1	5	3	8	1	..	1	1	5	6	..	2	2
Feb	34	50	84	12	18	30	37	42	79	11	17	21	38	51	89	19	36	55	14	18	32	4	7	11	2	2	4	..	..	...	7	5	12	2	2	4	1	9	10	..	3	3
March	52	65	117	10	14	24	75	104	179	21	36	57	97	110	207	26	86	112	40	18	58	7	4	11	5	9	14	..	4	4	27	10	37	8	4	12	..	7	7	..	1	1
April	63	74	137	12	11	23	84	110	194	28	36	64	117	180	297	39	92	131	32	18	50	12	7	19	9	25	34	3	6	9	34	21	55	8	7	15	1	2	3	..	..	..
May	41	62	103	22	29	51	41	61	102	18	22	40	105	97	202	26	25	51	25	13	38	6	..	6	16	54	70	7	18	25	11	4	15	1	1	2	..	1	1	..	..	..
June	13	67	80	9	31	40	16	41	57	9	20	29	31	69	100	12	25	37	18	12	30	7	5	12	35	44	79	15	14	29	10	4	14	1	1	2	..	1	1	..	..	..
July	17	27	44	11	17	28	13	10	23	7	7	14	12	11	23	5	3	8	21	11	32	5	2	7	15	15	30	12	8	20	10	14	24	3	3	6	1	..	1	1	..	1
Aug.	11	19	30	5	14	19	8	16	24	6	6	12	11	7	18	5	1	6	27	11	38	9	5	14	5	27	32	3	9	12	4	4	8	1	1	2	6	..	6	2	..	2
Sept.	5	10	15	3	8	11	8	8	16	5	9	14	4	4	8	2	...	2	4	5	9	1	..	1	2	22	24	..	11	11	...	..	...	..	..	..	2	2	4	1	1	2
Oct	4	4	8	3	5	8	3	7	10	...	1	1	1	3	4	...	...	...	1	...	1	1	..	1	4	16	20	1	4	5	1	..	1	..	..	..	..	6	6	1	1	2
Nov.	1	5	6	2	7	9	1	4	5	1	2	3	...	...	...	...	...	...	1	...	1	..	..	..	15	6	21	11	6	17	...	..	...	..	..	..	4	..	4	1	..	1
Dec.	6	4	10	0	2	2	5	7	12	1	4	5	0	2	2	0	1	1	...	...	...	..	..	..	4	8	12	3	1	4	4	1	5	2	..	2	..	..	..	..	..	..
	284	443	727	98	173	271	309	440	749	107	171	278	439	552	991	143	282	425	200	129	329	56	39	95	114	228	342	56	81	137	113	66	179	27	19	46	16	33	49	6	8	14

No. of Cases up to Dec. 31, 1883—
Whites.....1,475
Colored.....1,891
Total.....3,366

No. of Deaths up to Dec. 31,1883—
Whites..... 493
Colored..... 773
Total 1,266

From January 1 to May 12, 1883, 152 deaths from small-pox occurred in the Luzenburg Hospital, accredited to the total number of deaths in the Third District.

From May 1 to December 31, 102 deaths occurred in the City Small-pox Hospital, accredited to the total number of deaths in the First District.

A large proportion of the deaths from small-pox occurred among strangers and non-residents of New Orleans, and among the natives of foreign countries, as will be shown from the preceding table, giving the total number of deaths from all causes, and from small-pox, during a period of four years in New Orleans, namely—1880, 1881, 1882 and 1883, classified according to years, months, nativities and races. During the period embraced in the table, the total annual deaths from all causes, and from small-pox, were as follows:

Years.	Deaths, All Causes.			Deaths, Small-Pox.		
	Whites.	Colored.	Total.	Whites.	Colored.	Total.
1880	3,637	1,986	5,623	1	0	1
1881	4,127	2,279	6,406	3	2	5
1882	3,582	2,340	5,922	116	299	415
1883	4,552	2,971	7,523	493	773	1,266
	15,898	9,576	25,474	613	1,074	1,687

During 1880 and 1881, not a single native of Louisiana died from small-pox.

In 1882, of a total death from small-pox of 415, sixty-five were natives of other States of the American Union, 330 were natives of Louisiana, and twenty of foreign countries. Of the natives of other States, two were white and two hundred and sixty-three colored. Of the natives of Louisiana, ninety-fivefive were white and 235 colored.

In 1883, of a total of 1266 deaths from small-pox, 181 were natives of other States, 1011 of Louisiana; seventy-four of foreign countries; of the natives of other states, thirty-four were white, and 147 colored; of the natives of Louisiana, 392 were white, and 619 colored.

Of the 1687 deaths from small-pox during the four years specified, 250 were from other States; whites, thirty-eight, colored, 213; of 1341 from Louisiana, 487 were whites, and 857 colored, the ninety-six from other countries were all white; of the total number of deaths the whites were 613 and the colored 1074.

The difference in favor of Europeans and foreigners generally, was not due solely to differences of population but cheifly to the more perfect and general vaccination of the inhabitants of England, France, Germany and Italy. This table also illustrates the large proportion of fatal cases occurring amongst negroes not natives of Louisana.

YEAR.	MONTHS.	Small-Pox. Total Deaths.		NATIVITIES.																All Causes. Total Deaths.		Grand Total.
				Un'd States		Louisiana.		Germany.		France.		Ireland.		England.		Spain.		W. Indies.		Other For'n Countries.				
		White.	Colored	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	White.	Colored	
1880	May			1																		361	220	581
	Total	1		1																		3,637	1,896	
	Total, 1880																					5,623		
1881	April	1		1																		343	186	529
	May	1														1						450	233	683
	December	1	2		2					1												306	175	481
	Total	3	2	1	2					1						1						4,127	2,279	
	Total, 1881	5		3						1						1						6,406		
1882	January	1	5		1	1	4															282	186	468
	February	3	7		4	3	3															266	151	417
	March	11	49	1	24	7	24	3														256	209	465
	April	24	48		15	19	33	3				1										308	231	539
	May	17	52		3	14	49	2				1										330	259	589
	June	22	47	1	4	19	43			2												335	226	561
	July	13	18		2	12	16	1														288	172	460
	August	6	12		2	5	10	1														267	176	443
	September	1	14		1		13			1												239	161	400
	October	1	15		2	1	13															306	183	489
	November	3	8		2	2	6					1										322	184	506
	December	14	24		3	12	21	1														383	202	585
	Total	116	299	2	263	95	235	11		3		3										3,582	2,340	5,922
	Total, 1882	415		265		330		11		3		3										5,922		
1883	January	24	52	2	14	19	38	3														393	214	607
	February	48	83	4	20	37	60	5		1						1			1		2	354	253	607
	March	79	140	5	42	56	105	8		3					1						1	382	352	734
	April	102	159	5	23	78	136	8		5		1				1				4		374	339	713
	May	80	95	4	14	67	79	2		3		1						2	1	1	1	388	278	666
	June	53	96	2	15	46	81	2		1		1		1								404	250	654
	July	44	40	5	6	35	34	2				1								1		373	199	572
	August	31	36	1	3	26	33	3		1												310	211	521
	September	12	29	1	2	10	27	1														345	223	568
	October	6	11	2	2	4	9															367	214	581
	November	15	15	1	4	10	11	2		1										1		452	226	678
	December	6	8	2	2	4	6															410	212	622
	Total	493	773	34	147	392	619	36		15		4		1	1	2		2	2	7	4	4,552	2,971	
	Total, 1883	1,266		181		1,011		36		15		4		2		2		4		11		7,523		
Summary	Total w & c	613	1,074	38	212	487	854	47		19		7		1	1	3		2	2	10	4	15,898	9,576	
	Grand Total	1,687		250		1,341		47		19		7		2		3		4		14		25,474		

The following table presents the deaths by small-pox classified according to sex.

In 1880 one death was caused by small-pox in the month of May, the patient was a male; in 1881 one death occurred in April and one death in May, and three deaths in December. Total, five deaths, all males.

Deaths from small-pox in New Orleans, during the years 1882 and 1883, classified according to months and sex:

MONTHS.	1882.			1883.		
	Deaths by Small-pox.			Deaths by Small-pox.		
	Males.	Females	Total.	Males.	Females	Total.
January	6	0	6	37	39	76
February	7	3	10	81	50	131
March	36	24	60	124	99	221
April	45	27	72	154	107	261
May	37	32	69	98	77	195
June	33	36	69	80	69	149
July	17	14	31	49	35	84
August	11	7	18	35	32	67
September	8	7	15	24	17	41
October	10	6	16	9	8	17
November	4	7	11	20	10	30
December	16	22	38	6	8	14
Total	230	185	415	717	549	1,266

Total deaths from small-pox during the years 1880, 1881, 1882 and 1883' 1687; males, 953; females, 734.

The preceding statistics establish the following conclusions:

1. During the years 1880 and 1881, all those who died by small-pox were males, and brought the small-pox to New Orleans from the surrounding States.

2. In the month of February, 1882, the six deaths were all males; during this year, out of a total of 415 deaths caused by small-pox, the males exceeded the females in the proportion of 230 to 185.

3. In 1883, out of a total of 1266 deaths, caused by small-pox, 717 were males, and 549 females.

4. The largest proportion of deaths occurred amongst the male population, although the females in New Orleans outnumber the males. Thus, according to the United States census of 1880, white males 75,692, white females 82,702; total whites 158,695; colored males, 25,247; colored females 32,510 total colored 57748; total males 100,945; total females 125,203; total males and females, 215,143.

5. The greater number of deaths from small-pox among the males must be referred to several causes as:

(a) Greater exposure of the males to contagion.

(b) The large number of males conducting the commerce of the Mississippi river.

(c) The large number of males engaged in building the railroads leading to New Orleans.

6. Small-pox entered New Orleans and formed a lodgment, not from the ocean and Gulf of Mexico, by merchant vessels, but it was brought in from the surrounding States, by steamboat and by rail-road.

7. The colored race, in their present condition of ignorance, poverty and helplessness form the great hot-bed or breeding ground for the preservation and dissemination of small-pox. Before the recent civil war, and before the emancipation of the slaves, the planters employed competent physicians, enforced vaccination, and when small pox occurred, they isolated the cases in houses and hospitals built for the purpose of segregating contagious diseases.

8. New Orleans will be perpetually exposed to the introduction and ravages of small-pox, whenever the disease appears and prevails among the colored people of the Mississippi valley.

9. The subject of vaccination should engage the earnest consideration of the United States government and of each State government, and suitable laws regulating and perfecting and enforcing vaccination upon all citizens, irrespective of race, and condition should be devised and executed.

10. The question of the spread of small-pox amongst the colored race of the Southern States is one of paramount importance, and should engage the earnest consideration of wise and humane legislators.

GENERAL RESULTS OF THE QUARANTINE OPERATIONS OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA, FOR THE EXCLUSION OF FOREIGN, PESTILENCE AND MORE ESPECIALLY YELLOW FEVER, FROM THE MISSISSIPPI VALLEY DURING THE YEARS 1880, 1881, 1882 AND 1883.

MISSISSIPPI QUARANTINE STATION.

CONDITION OF MISSISSIPPI QUARANTINE IN 1880; REPAIRS, ADVOCATED BY THE PRESIDENT OF THE BOARD OF HEALTH, 1880; RIGOLETS AND ATCHAFALAYA QUARANTINE STATIONS, 1880.

The Mississippi Quarantine Station is located upon the eastern bank of the Mississippi river, about seventy-five miles below New Orleans, and thirty-five miles from the Gulf of Mexico. The grounds immediately on the Mississippi river are enclosed by a levee of moderate height and strength. The levee, running parallel with the Mississippi river, is about 1700 feet in length, and the opposite or back levee, about 1600 feet; the upper and lower levees running perpendicularly to the Mississippi river measure each about 730 feet in length. The entire area enclosed by this levee within the lines of which are situated the Quarantine hospitals, physician's residence, and the United States warehouse, is about 1,113,750 square feet. The grounds slope back gently to Quarantine Bay, an arm of the Gulf of Mexico, about one mile distant.

By reference to the map of Louisiana, it will be seen that from a point about midway between New Orleans and the Gulf of Mexico, the eastern portion of the alluvial delta, through which the Mississippi River flows, is narrowed to a mere strip of land, ranging from one to two miles in width. This entire strip of land is subjected to peculiar climatic conditions. On the one side flows the Mississippi River, bearing its cool waters from the

Alleghanies in the east and the Rocky Mountains in the west; on the other open the waters of the grand Gulf of Mexico. Located thus between the Mississippi River and an estuary of the Gulf of Mexico, the atmosphere is agitated by sea breezes, and the climate is purer and more stimulating than that of New Orleans.

Careful inquiry revealed the facts that whilst this narrow strip of land is elevated only a few feet above the level of the Gulf of Mexico, at the same time, from the close proximity of the atmosphere of the salt water of the Gulf, the type of malarial fever in these localities, where rice is not cultivated, is mild, and many diseases of more elevated regions, as typhoid fever, inflammatory rheumatism, pneumonia, pleuritis, and phthisis are almost unknown. Under moderate circumstances, and when removed from the vicinity of rice fields, the inhabitants of this portion of Louisiana enjoy as long lives as in the most famed regions of the tropical and semi-tropical and temperate regions of the earth; whilst at the same time the soil is of unexampled fertility, and the earth rewards the labors of the husbandman with abundant fruits and harvests. The orange attains perfection, and the sugar-cane has been known to tassel in this portion of the delta, whilst the surrounding waters abound with fish, shell fish, crabs and shrimp, and in the winter season teem with ducks and geese.

The Mississippi River at the Quarantine Station, as well as in the harbor of New Orleans (which in depth and safety is unsurpassed by any other on this globe), affords an anchorage for ships of all sizes.

It is evident, therefore, from the preceding facts, that the location of the Mississippi Quarantine Station was well chosen, both for the protection of the Mississippi Valley from foreign pestilence and for the welfare and protection of shipping during the performance of quarantine.

This Quarantine Station commands the mouths of the Mississippi River, and can be superseded by no other quarantine removed from the banks of this river.

Quarantine establishments may be located either at the mouths of the Mississippi River or at the head of the Passes, or further up beyond the present location, nearer the city, as was the case in former times at the English Turn. But the protection of the Mississippi Valley from the introduction of foreign pestilence demands the existence of a thoroughly equipped and efficiently officered quarantine establishment on the banks of the Mississippi River, between New Orleans and the Gulf of Mexico.

No one at all conversant with the topography of the coast of Louisiana, Texas, Mississippi and Alabama would for a moment conceive that the commerce of this great valley could be forced by the way of Ship Island or any other point beyond the borders of the Mississippi River.

However and whenever detained and quarantined on the coast of the Gulf of Mexico, ships must again undergo thorough inspection, and be subjected to rigid quarantine regulations, when they enter the gateway of the Valley of the Mississippi.

Drainage canals are located on the water side of the upper and lower levee, and communicate with Quarantine Bay, and the grounds are intersected with ditches at regular intervals. The levees are covered with grass; and at the upper bank and lower lines are in better condition than on the river front.

Upon the area surrounded by the levee the following buildings are located, and in this examination we will proceed from the upper portion of the quarantine grounds downwards.

1st. *Fever Hospital.* The Hospital devoted to the treatment of fever, and more especially yellow fever, is a two-story frame building, situated about 230 feet from the line of the upper levee, and 150 feet back of the levee fronting the river: 125 feet long, 33 feet wide and 35 feet high; upper and lower galleries, 9 feet wide and 125 feet long, run along the front of the Hospital. This building contains nine rooms on the lower floor and four rooms on the upper; in all thirteen rooms. Halls divide the lower floor at right angles.

The upper floor is divided into four capacious, well-ventilated wards. The rooms and halls are plastered, and the ventilation is excellent. The entire building is well adapted to the treatment of fever patients.

The wards are supplied with windows, at regular intervals in front and rear, and thorough ventilation can at all times be secured.

The cubic capacity of the wards and rooms of the fever hospital is 55,030 cubic feet; of the halls and corridors 8788 cubic feet, giving a total cubic capacity, exclusive of the galleries, of 63,818 cubic feet.

If 1100 cubic feet of air be allowed to each patient, this hospital is capable of accommodating about sixty patients.

In the rear of this hospital, or connected with it by a platform 20 by 4 feet, is a kitchen with two rooms 14 by 14 feet and 10 feet in height, with gallery 28 by 8 by 14 feet.

The graveyard of the Quarantine Station is located about 200 feet to the rear of the fever hospital, and is surrounded by a rude fence and covers about three-fourths of an acre. Marks of about one hundred graves can be discerned in the enclosure, which are thickly covered with tall grass, brambles and shrubs.

There is only a solitary marble monument, which bears the following inscription:

"A la m moire de Trente Marins, faisant partie de l'équipage de l'avito a vaisseau de la Marine Imperiale le Tonnerre, décédés a la Quarantine de la Nouvelle Orleans en Août, 1857. Erigé par l'odre de S. E. l'Admiral Hamelin, Ministre de la Marine de l'Empereur Napoleon III."

BOATMEN'S QUARTERS AND QUARANTINE LIGHT.

This wooden structure is situated 320 feet from the centre of the Fever Hospital, immediately in front of the levee; 31 by 21 feet, divided into six rooms. The quarantine light is connected with the boatmen's quarters by a gangway 126 feet long and 5 feet wide, projecting into the Mississippi river. The lower portion of the quarantine light has been used as a boat-house until the formation of a sand-bar rendered it useless for this purpose. The quarantine light is a wooden structure, 33 by 21 feet. A large bell, which is tolled in foggy weather, is attached to the quarantine light. Immediately in the rear of the boatmen's quarters (40 feet within the line of the levee) stands a small frame house, 30 feet square, which is used as a storehouse for disinfectants.

RESIDENCE OF QUARANTINE PHYSICIAN.

The residence of the quarantine physician and his assistant occupies very nearly the centre of the front of the quarantine grounds, about 314 feet from the boatmen's house and 100 feet back of the levee. This small wooden building contains four rooms, a hall, gallery and kitchen. A small house, 12 by 16 feet, occupies the upper angle of the small enclosure, surrounding the resident physician's quarters.

SMALL-POX HOSPITAL.

The small-pox hospital, situated 500 feet from the physician's residence and 106 feet from the front levee, has two stories, each of which has four rooms or wards, 18 feet wide, 20 feet long and 11 feet high, giving a cubic capacity of each ward of 3960 feet, and for the entire hospital, eight wards, 31,860 cubic feet. There is on each floor a cross-hall, 20 feet long by 7 feet wide and 11 feet high; cubic capacity of each hall, 1590 cubic feet, and of both halls, 3080 cubic feet,

Total capacity of small-pox hospital (80 feet in length, 20 feet wide, 11 feet high), 34,760 cubic feet.

If 1100 cubic feet of air be allowed to each patient this hospital would accommodate about thirty patients. Galleries run the length of the front of the hospital, above and below, and are each 80 feet in length, 9 feet in width and 11 feet in height. There is a small building in the rear designed as a kitchen, 14 by 14 by 10 feet.

UNITED STATES WAREHOUSE.

The government grounds commence about 70 feet from the small-pox hospital, and extend to the lower levee. The government warehouse is a substantial fireproof brick building, situated about 125 feet from the centre of the small-pox hospital, and consists of a main hall and two wings, and is two stories in height. The upper story is supported by brick and iron arches. No wood is used in the construction of the building.

The two main halls, in the first and second floors, are each 140 feet in length by 23 feet in width, and 12 feet in height, giving a cubic capacity of 28,640 cubic feet; total 77,289 cubic feet. The two wings are each 54 feet in length and 25 feet in width and 12 feet in height, each floor giving a capacity of 16,200 cubic feet for each wing; total capacity of wings 64,800 feet; total capacity of government warehouse 142,080 cubic feet.

The United States wharf is substantially built, with boat-house attached. The main wharf is 100 feet long by 30 feet, and the depth of water immediately at the river front is 22 feet. The gangway leading from the wharf to the warehouse is substantially built, and is 239 feet long by 20 feet wide, with wooden railway extending from the wharf to the warehouse.

HISTORY OF THE ERECTION, AND AMOUNTS EXPENDED UPON THE MISSISSIPPI QUARANTINE STATION.

On the fifteen of March, 1855, the Legislature of Louisiana, appropriated the sum of $50,000 for the erection at the Quarantine Station, on the Mississippi River, of two separate buildings, as hospitals for the sick, of a small house as residence for the officers appointed under this act, and of a well ventilated store for the reception of the freights of such infected vessels as the Resident Physician may deem necessary to cause to be unloaded.

By the first section of act of Congress entitled "An Act making appropriation for certain civil expenses of the government for the year ending the thirtieth of June, 1858," approved third of March, 1857, the sum of $50,000 was appropriated for the construction of warehouses at Quarantine Station, on the Mississippi River below New Orleans.

On the eighth of February, 1858, it was enacted by the Senate and House of Representatives of the State of Louisiana, in General Assembly convened, "that the State of Louisiana does cede to the United States jurisdiction over the site of such warehouses as shall be constructed under the act of Congress, approved the third of March, 1857, aforesaid, at Quarantine Station on the Mississippi River, below New Orleans, and does hereby further grant to the United States the use of so much land as may be necessary for the construction of such warehouses, with water front, and privilege of the wharf now built or hereafter to be built on said Station,"

It was furher enacted "that the Board of Health of the State of Louisiana be and they are hereby authorized and required to designate so much land to said Quarantine Station as may be necessary for the construction of the warehouses aforesaid,"

On the eighteenth of March, 1858, it was enacted by the Senate and House of Representatives of the State of Louisiana in General Assembly convened, "That the property at the Quarantine Station, on the Mississippi River, located in this State, the use and jurisdiction over which has been granted by the State of Louisiana to the United States for the purpose of constructing government warehouses, together with the improvements and buildings which the Government of the United States may erect thereupon, shall be and is hereby exonerated from all taxation and assessments by the State, or by any authorities acting under the State, so long as said property is in possession of the United States."

CONDITION OF THE MISSISSIPPI QUARANTINE STATION AT THE TIME OF THE INAGURATION OF THE PRESENT QUARANTINE PHYSICIAN, APPOINTED BY GOV. WILTZ.

The hospitals were almost absolutely bare of furniture, beds, bedding and utensils, and without the necessary facilities for the treatment of even a limited number of sick; the grounds were open and roamed over by cattle, the drainage ditches were in many places choked up, and the building needed cleansing, painting and thorough repair.

GENERAL CONCLUSIONS AND RECOMMENDATIONS SUBMITTED TO THE BOARD OF HEALTH, WITH REGARD TO THE MISSISSIPPI QUARANTINE STATION, BY THE PRESIDENT, ON THE TWELFTH OF JUNE, 1880.

1. (*a*). The location of the quarantine grounds and buildings is excellent, and the service is energetic.

(*b*). The Mississippi quarantine contains a considerable amount of valuable property. The United States warehouse alone cost $58,000, and is well adapted to the reception of the cargoes of ships. The entire value of the buildings cannot be less than $75,000.

(*c*). The immediate wants of this Quarantine Station are: 1, Medical stores for hospitals. 2. Bedding, linen, and utensils for hospitals. 3. Fumigating apparatus. 4. One launch boat. 5. A competent man, who shall be placed in charge of the hospital stores and furniture. 6. One or more laborers, whose duty it shall be to open the drains, repair and build the fences, whitewash the houses and wards and keep the buildings and grounds in good sanitary condition.

(*d*). The position of the Quarantine Station, at the mouth of this great river, which has over 20,000 miles of navigable streams, tributary to the great valley with its 20,000,000 of inhabitants, is of vast importance.

(*e*). It is the solemn duty of the Board of Health of the State of Louisiana to place the Mississippi Quarantine Station in the best and most effective condition, to fulfill its important mission of protecting this great valley from the importation of foreign pestilence, and at the same time affording a safe retreat, where sick seamen may receive kind and humane nursing and skillful medical treatment.

2. (*f*). While protecting this valley rigidly from the introduction of foreign pestilence, at the same time the commerce and prosperity of the valley should be promoted by the perfection and enlarged application of all reliable means for disinfection, fumigation and sanitation.

3. (*g*). The Mississippi Quarantine Station, notwithstanding the absence of certain hospital furniture and supplies, is administered by the quarantine physician and his assistant with intelligence and energy.

4. (*h*). The laws of the State of Louisiana, and the rules and regulations of the Board of Health, are rigidly executed.

(*i*). All vessels arriving from infected ports, or from ports in which yellow fever usually prevails at certain seasons of the year, are detained and thoroughly cleansed and fumigated.

(*j*). All vessels arriving at Quarantine Station are carefully inspected.

(*k*). All vessels from infected ports, even though they may bring clean bills of health, are detained not less than seventy-two hours for inspection, observation, purification, disinfection and fumigation.

(*l*). The length of the detention depends upon the nature of the bill of health, the condition of the port from whence the vessel sails, the history of the vessel while in port and during the voyage, and the actual condition of the crew, cargo and vessel at the time of arrival at the Quarantine Station.

This is the case with the ships from Rio de Janerio, a badly infected port. Every effort is made for their thorough purification. The cargo is removed from the hold and thoroughly ventilated; the hold fumigated at intervals with sulphurous acid gas; the sides and floors of the ship and decks are scraped and washed with antiseptic disinfectants; the bilge water is removed and replaced by a solution of copperas and carbolic acid. In such cases the detention is not less than ten days, and often varies from fifteen to twenty days.

4. (*m*). In order to secure thorough inspection and observation, the shipping is again inspected in the harbor of New Orleans; and the cargo of ships from badly infected ports again subjected to fumigation and disinfection.

(*n*). The vigilance exercised over our shipping is also extended to the city of New Orleans, and the members and officers of the Board of Health stand ready to investigate all cases which may arise in the future, and will use all known useful means for the abatement, circumvention and eradication of infectious diseases.

5. (*o*). In conclusion the President of the Board of Health respectfully urges that the Board of Health confer upon him the power to make, at the earliest practicable moment, the following appointments and the following appropriations for the Mississippi Quarantine Station:

One hospital steward and druggist.
One laborer.
One hospital nurse.

Amount for disinfecting apparatus	$250
Hospital furniture, beds and bedding	250
Hospital utensils	150
Drugs, medicines and medical apparatus	100
Hospital and quarantine tools, spades, axes, hatchets, saws, planes, hoes, nails, whitewash brushes, etc	95
Repairs of boats	59
Removal and repair of boat-house	150
Disinfectants	100
Total	$1,125

In the above estimate I have included only those expenditures which are immediately demanded to give efficiency to the Mississippi Quarantine Station, and to provide for the actual wants and treatment of the sick.

The thorough repair of the buildings and the thorough ditching and fencing of the grounds, together with the erection of a suitable frame building for the well passengers, will require further consideration and liberal appropriations.

At this moment the Board of Health of the State of Louisiana is not in a position to advance the necessary amounts.

But with economy, energy and perseverance, it is the hope of the board that the Mississippi Quarantine Station may be placed in the most effective condition for the protection of the State from the importation of foreign pestilence and for the protection of commerce and the relief of sick and suffering humanity.

The relations of the actual resources and the necessary expenses of the Mississippi Quarantine Station, are shown by the following tables:

RECEIPTS OF THE BOARD OF HEALTH FROM QUARANTINE STATION.

1869	$23,960 00
1870	20,995 00
1871	23,624 00
1872	18,803 50
1873	18,336 69
1874	19,280 60
1875	13,801 59
1877	15,121 60
1878	19,931 00
1879	18,114 75

ANNUAL EXPENSES FOR SALARIES.

Resident Physician	$5,000
Assistant	2,000
One Watchman	540
One coxswain	540
Four boatmen	1,920
Total annual expenses for salaries of officers and boatmen	10,000

NECCESSARY EXPENSES FOR THE EFFICIENT CONDUCT OF THE MISSISSIPPI QUARANTINE STATION.

One Druggist and hospital steward, at $75 per month—12 months	$900
Two Hospital nurses, at $50 per month—12 months	1,200
One Hospital cook, at $30 per month—12 months	360
Two Laborers and keepers of hospital grounds, at $30 per month each	720
Medicines and hospital supplies, furniture, bedding, etc	1,000
Repair of boats	300
Disinfectants and disinfecting apparatus	1,500
Repair of buildings, painting, whitewashing, etc., per annum	5,000
Food and stimulants for the sick	1,000
Ship chandler supplies	500
	$12,380

According to the organic law of the State the salaries of the President, and of the Secretary and Treasurer should be included in the above estimate; which at the present rates per annum would bring the total amount necessary for the proper conduct of the Mississippi Quarantine Station during the year 1880, up to at least $26,780, a sum considerably in excess of the receipts of any one year, since the recent civil war."

The report was received and adopted, and $2200 appropriated by the Board of Health, to be applied by the President and finance committee for the necessary suplies of medicines, disinfectants, and disinfecting apparatus for the Quarantine Station.

Hospital furniture, beds, bedding, mosquito bars, blankets, pillows and pillow-cases, and medicines sufficient for the efficient treatment of about twenty patients, together with cooking stove and kitchen furniture, and disinfecting apparatus, paints, tools, etc., were purchased at the earliest practical moment and shipped to the Quarantine Station.

At the meeting of the Board of Health on the nineteenth of November, an additional sum of five thousand dollars ($5000) was appropriated to the repair of the Mississippi Quarantine Station.

In order to supplement the operations of the Mississippi Quarantine and of the Rigolets, and in order to secure the highest attainable sanitary condition in the shipping in the harbor along the river front and within the basins lying within the heart of this great city, the President drew up a code of sanitary rules and regulations, which were unanimously adopted and promulgated by the Board of Health on the 22d of April.

In accordance with section 3 of the Sanitary Rules of the Board of Health of the State of Louisiana, regulating shipping in the port of New Orleans, the President commissioned the Sanitary Inspectors of the several districts and appointed an Assistant Deputy Inspector, and empowered them, in accordance with the acts of the Board of Health, to carefully inspect the shipping, and to use such measures as were in accordance with the regulations.

From the following table it will be seen that during the months of May, June, July, August, September and October 462 vessels were inspected in the harbor of New Orleans, exclusive of the vessels inspected in the old and new basins.

TABLES SHOWING THE NUMBER, CLASS, AND NATIONALITY OF VESSELS ARRIVED IN THE PORT OF NEW ORLEANS DURING THE SIX MONTHS ENDING OCTOBER 31, 1880, WHICH WERE INSPECTED BY THE SANITARY INSPECTORS OF THE BOARD OF HEALTH, STATE OF LOUISIANA.

Months.	Steamships	Ships.	Barks.	Brigs.	Schooners.	Total.
May	33	15	25	5	18	96
June	35	2	17	1	11	66
July	40	2	18	1	6	67
August	38	3	11		4	56
September	53	13	3		4	73
October	77	7	25		5	104
Total	266	42	99	7	48	462

Nationality.	Steamships	Ships.	Barks.	Brigs.	Schooners.	Total.
American	103	27	21	2	42	195
British	134	9	26	1		170
Spanish	26		14	1		41
Norwegian			10	1		11
Swedish			3	1		4
German	3	3	3			9
Italian			7	1		8
French		3	8		1	12
Austrian			6			6
Mexican					5	5
Danish			1			1
Total	266	42	99	7	48	462

Sanitary rules were also recommended by the President of the Board of Health of the State of Louisiana, to be observed by vessels during their stay in the port of New Orleans, and in other ports and on their passage to and from New Orleans. The co-operation of the State and Federal authorities and of the various Foreign Consuls was urged. Four thousand copies of these sanitary rules were printed, and they have been systematically and continuously distributed by the Sanitary Inspectors of the Board of Health and by the various quarantine officers at the Mississippi, Atchafalaya and Rigolets Quarantine Stations to the captains, masters and agents of all vessels entering the waters of Louisiana.

On May 24, 1880, the rules and regulations for the government of quarantine officers and stations, and for the enforcement of the acts of the Legislature of Louisiana, "establishing and regulating quarantine for the protection of the State,"* were submitted by the President and unanimously adopted by the Board of Health, and four thousand copies have been printed and distributed by the Board of Health to the local boards in the United States, to foreign consuls, captains, masters and agents of vessels.

QUARANTINE OF VESSELS FROM THE INFECTED PORT OF RIO DE JANERIO, DISCHARGE OF CARGOES AT THE MISSISSIPPI QUARANTINE STATION, DISINFECTION OF COFFEE IN THE WAREHOUSES IN NEW ORLEANS.

The prevalence of yellow fever in the city of Rio de Janerio, received the prompt and earnest attention of the Board of Health immediately after its reorganization in April, 1880. The various vessels arriving with coffee, from this port were detained at the Quarantine Station for periods ranging from twelve to twenty days, the resident Quarantine physician was ordered to shift the cargoes by acclimated laborers, (that is by men who had suffered with yellow fever).

Whenever it became necessary to send down men to discharge cargo, each man was examined by the President of the Board of Health, and his statement taken under oath and a careful record was preserved, as to the age, nativity, previous attack of yellow fever, attending physician, residence, etc.

As a general rule the coffee ships from Rio discharge their cargoes in the First iDstrict of New Orleans, in which are located the large coffee warehouses. Each cargo of coffee was fumigated by the Sanitary Officer.

*Acts of the Legislature of Louisiana establishing and regulating quarantine for the protection of the State; organizing and defining the powers of the Board of Health, and regulating the practice of medicine, midwifery, dentistry and pharmacy; also, rules and regulations of the Board of Health of the State of Louisiana and health ordinances of the city of New Orleans, by Joseph Jones, M. D., New Orleans, 1880 pp. 36-51.

The following facts with reference to the prevalence of yellow fever, and other diseases in Rio de Janerio, were communicated monthly to the Board of Health by the Consul, General Thomas Adamson.

In Rio de Janeiro there occurred in the month of November, 1879, total deaths from all causes 850, yellow fever 9, small-pox 11, enteric or typhoid fever 20, pernicious fever 22; month of December, 1879, total deaths 915; yellow fever 18? small-pox 9, enteric or typhoid fever 13, pernicious fever 43, consumption 153, month of January, 1880, total deaths 1062, yellow fever 133, small-pox 2, enteric or typhoid fever 14, scarlet fever 5, pernicious fever 54, consumption 166, month of February, 1880, total deaths 1352; yellow fever 484, small-pox 1, typhus fever 1. typhoid or enteric fever 19, scarlet fever 1, pernicious fever 76. consumption 140. Present estimated population of Rio de Janeiro 330,000. March total deaths 1389; yellow fever 468, typhus fever 3, enteric or typhoid fever 17, pernicious fever 60, consumption 153, month of April, 1880, total deaths 1008, yellow fever 274, typhus fever 2, enteric or typhoid fever 15, pernicious fever 40, consumption 150. month of May, 1880, total deaths 914, yellow fever 105, typhoid fever 14, pernicious fever 28, consumption 148, month of June, 1880, total deaths 812, yellow fever 55, typhus fever, typhoid fever 8, pernicious fever 24, consumption 143.

INSPECTION STATION ESTABLISHED AT MOUTH OF MISSISSIPPI RIVER.

In accordance with the resolution of the Board of Health empowering the President to appoint a Quarantine and Sanitary Inspector for the Mouths and Passes of the Mississippi River, with headquarters at Port Eads, the following circular letter embraces the more essential instructions issued annually to the medical officers who have occupied this responsible and important post during the past four years, 1880, 1881, 1882 and 1883;

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, ————, 1880.

Dr. ————, of New Orleans, is hereby appointed Quarantine and Sanitary Inspector for the mouth of the Mississippi River, with ample power of supervision over the shipping entering the mouth of the Mississippi River, and over the inhabitants, shipping and visitors and employes at the Jetties, Port Eads, Pilot Town and Southwest Pass.

Dr. ————, Quarantine and Sanitary Inspector of the Board of Health of the State of Louisiana, will allow no communication between the shore. by unauthorized persons, with vessels subject to the quarantine regulations and laws of the State of Louisiana and the rules and regulations of the Board of Health. He will regulate the mode of towing infected vessels, and he will report promptly to the Board of Health, through its executive officers, all infractions of the quarantine laws and of the rules and regulations of the Board of Health of the State of Louisiana.

The Quarantine Inspector will also direct the sanitary affairs of the Jetties, Port Eads and Pilot Town, and report promptly the occurrence of contagious or infectious diseases to the President of the Board of Health.

The Quarantine Inspector is also empowered to investigate all cases of disease, and especially all varieties of fever of a serious character, which may prevail along the banks of the Mississippi River, between the mouths and the city of New Orleans.

In the discharge of the above important duties, the Quarantine Inspector of the Board of Health of the State of Louisiana will be obeyed and respected accordingly.

JOSEPH JONES, M. D.,
President of the Board of Health State of Louisiana.

This inspection service was maintained, during the existence of the Quarantine proclamation of the Governor of the State of Louisiana, annually in 1880, 1881, 1882 and 1883.

The entire cost of this inspection, as maintained by the Board of Health, during this period of four years, was less than three thousand dollars; nevertheless, the results obtained were of the most important character, in furnishing prompt information to the President of the Board of Health, of the appearance of infected vessels at the mouth of the Mississippi river, and also in preventing improper and illegal intercourse between vessels from infected ports, with steamers, tug-boats, and with the inhabitants of the surrounding shores.

The stringent measures of 1883, which excluded all vessels from ports infected with yellow fever from the waters of Louisiana, could not have been properly executed by the President of the Board of Health, in accordance with the proclamation of the Governor of Louisiana, without an active and faithful officer at the mouth of the Mississippi river.

The resistance of the Quarantine authorities, by the British Steamship Vanguard, on the twenty-third of May, 1880, was promptly met; the Civil Sheriff, of the parish of Orleans, in accordance with the order of the President of the Board of Health, forcibly seized the Steamship Vanguard, and returned her to the Quarantine Station*.

*For details of the case of the British Steamship Vanguard, see Annual Report of the Board of Health of the State of Louisiana, for 1880; pp. 25-28.

The Swedish bark Excelsior, Captain J. T. Bjorkgren, left Rio Janeiro on the tenth of May, 1880, and arrived at the Mississippi Quarantine Station June 24, having been on the voyage about fifty-six days. Her crew consisted of three officers and nine seamen. No case of sickness occurred either at Rio or on the voyage to the Mississippi Quarantine Station. After detention at the Mississippi Quarantine Station for twelve days, during which period no sickness occurred, the bark was released, and reached New Orleans on the fifth of July. One of the crew was seized with fever on the seventh, and on the tenth of July was transferred from the vessel to the Touro Infirmary, and the case reported to the President of the Board of Health. Upon examination I found the man suffering with yellow-fever. The vessel was boarded, the crew mustered upon deck and carefully examined. I was convinced that at least two of the seamen presented febrile symptoms, and concluded that they would develop into yellow-fever.

The officer in charge was ordered to keep his men on board, and to proceed with all possible dispatch to the Mississippi Quarantine Station. Captain Thomas McLellan, of the New Orleans Towboat Line, was ordered to return the bark to the Mississippi Quarantine Station.

The officer in command of the Excelsior refused to leave the wharf, on the ground that the vessel was not properly ballasted, and would capsize if towed into the stream. I then issued an order to the Civil Sheriff of the Parish of Orleans, commanding him, in the name of the State of Louisiana, and the Board of Health, to remove the bark Excelsior forthwith to the Mississippi Quarantine Station.

From the following extracts from the financial report of the Secretary and Treasurer of the Board of Health, you will observe that the execution of this order was attended with a considerable expense to the Board of Health.

Paid expenses attending removal of infected bark Excelsior from city to Quarantine Station:

Civil Sheriff's fees	$ 63 50
Tug Wilmot, towage bill	150 00
Eager, Ellerman & Co., for ballast	15 00
Dr. Mioton, special services	25 00
Total expenses attending removing of bark Excelsior paid by Board of Health	$253 50

If to this be added the expenses of the Texas Health Officer and of the Texas Committee and Members of the Board of Health, who visited the Mississippi Quarantine Station for the purpose of investigation, $139, we have a total expense of $392 50.

Telegrams and also written instructions were dispatched by the President, to the resident and assist resident physicians at the Mississippi Quarantine Station, giving the facts relating to a case of fever and the return of the vessel to quarantine; and stringent orders were issued to keep the vessel and crew in close quarantine, separated from all other vessels, allowing no communication with the shore on either side, or with the city of New Orleans, or with the settlements at the jetties and Pilot Town.

The Board of Health retained the Excelsior at the Quarantine Station for over one month after the removal of the last case from the vessel on the fourteenth day of July.

The man removed on the twelfth to Quarantine Hospital, and who recovered, was released on the twenty-fifth from the hospital as entirely convalescent.

The President of the Board of Helth advocated the release of the vessel one month after the removal of the last case to the hospital, on condition that she be retained at some point below the city, on the opposite side of the river, there receiving her cargo. It was held that it was not advisable for the vessel to come into the harbor among the shipping.

The opinion of the resident quarantine physician was also to the same effect, as will be seen from the following letter:

MISSISSIPPI QUARANTINE, AUGUST 4, 1880.

Dr. Joseph Jones, President of Board of Health, New Orleans, La.:

Sir—Knowing of considerable discussion arising as to the detention of the Swedish bark Excelsior at this station, I beg leave to state:

That it having been abundantly proved that the vessel and cargo were thoroughly fumigated at this station, and the yellow fever contracted by members of the crew was contracted while the crew were engaged in the then unfumigated portion of the cargo, which they were shifting preparatory to fumigation; and, that the first case of yellow fever occurring on said bark in New Orleans, appeared on the eighth day of July, without further spread of the disease.

That the second, third and fourth cases appeared at this station respectively, the eleventh, thirteenth and fourteenth of the same month. That the two last died respectively on the seventeenth and eighteenth of same month; all their effects brought on shore, consisting of a shirt, pair of pants, shoes, socks and a quilt, were buried with them. That the first case occurring here has recovered and is now on board the bark, being returned there thirty-first of July, having first thoroughly washed himself, a clean suit of clothes given him and those with which he came on shore having been thoroughly boiled and washed. That the vessel has again been subjected to a thorough disinfection with sulphurous acid gas, copperas and carbolic acid. That no further cases of illness or disease at any time having occurred on board since the vessel has been at this station, I suggest that after another fumigation, and should no further cases of illness occur on

board within thirty days after the last, that the vessel be allowed to proceed to New Orleans, and, to satisfy public uneasiness, be made to anchor in mid stream; receive her supplies and cargo there, and be allowed to proceed to sea

In my opinion, the best manner of proceeding in reference to the repairs necessary at this station, would be to request one of the State Board of Engineers to proceed to this station, make a thorough examination and report plans and specifications upon the same; upon which report the Board of Health could advertise for sealed proposals for the work.

Respectfully, your obedient servant, JAS. F. FINNEY, Resident Physician.

[Telegram.]

NEW ORLEANS, August 16, 1880.—Dr. Finney, Mississippi Quarantine: Board directs release of Excelsior thirty days from transferring last case of fever to hospital, July 14.

Fumigate ship, clothing, etc. Sprinkle ballast with fifty gallons copperas and carbolic acid solution.

JOSEPH JONES, M. D.
President Board of Health, State of Louisiana.

The Bark Excelsior was released from quarantine on the eighteenth of August, and was allowed to come up to Wood's Powder Wharf, on the opposite side of the Mississippi River, below Algiers, across from the United States Barracks.

The President of the Board of Health placed the vessel in the charge of Dr. Mioton, Sanitary Inspectar of Fifth District. A policeman was detailed to remain on board to prevent communication with shore or city. The vessel was sealed by acclimated carpenters, and loaded with grain, the floating grain elevator being towed down.

Every effort was made to protect the State of Louisiana and Valley of Mississippi from the introduction of yellow fever from this vessel; and the effort of the Board of Health was crowned with success, as no case of yellow fever was propagated from the bark Excelsior.

The malarious nature and non-contagious character of the cases of paroxysmal fever which occurred in and around, above and below Point Michel, in the Parish of Plaquemines, during the summer and autumn of 1880, was fully and unequivocally established by the investigations of the officers of the Board of Health, the local practitioners, and by the committee appointed by the National Board of Health. The results of these inquiries were published in the Annual Report of 1880.

The preceding official records illustrate the prompt action of the Board of Health of the State of Louisiana, in the cases of the Vanguard and Excelsior, and the efforts to cleanse and disinfect vessels from Rio de Janeiro, and other infected ports, regardless of the time necessary to accomplish these results.

The nature of the quarantine operations conducted by the Board of Health of the State of Louisiana during the year 1880, will be most fully shown, by the following extracts from the official reports of the quarantine officers:

REPORT OF J. F. FINNEY, M. D., RESIDENT PHYSICIAN MISSISSIPPI QUARANTINE STATION.

QUARANTINE STATION, MISSISSIPPI RIVER, LA., January 1, 1881.

Dr. Joseph Jones, President Louisiana State Board of Health:

Dear Sir—I have the honor to transmit to you this, the annual report of the affairs of this station for the year ending December 31, 1880, and it is with a feeling of no little pleasure; that I can say no vessels have been permitted to pass this station with sickness on board during the past seven months, notwithstanding the fact that there were 208 more vessels this year than last. It is true, sickness occurred on board the bark Excelsior after her arrival in the city, but, as you are well aware, that was due to no lack of vigilance on the part of myself or my assistant, as that vessel underwent a very rigid quarantine at this station for a period of twelve days, during which time no disease manifested itself.

I append to this report a classified list of vessels passing this station during the past year, the total number is 1271, and the aggregate tonnage of this fleet will reach nearly two millions, which is I believe the largest ever arrived at this port.

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*Annual report of the Board of Health of the State of Louisiana to the General Assembly for the year 1880, p. 34–192. Bark Excelsior, p. 34–43, p. 65–85, p. 88–108, p. 109–126. Malarial Fever of Plaquemines Parish, Louisiana, during the months of August, September and October, 1880, p. 127–132. Report of Dr. F. F. Taylor, p. 133. Report of Dr. George A. B. Hays, of Point Michel, Louisiana, p. 127–130. Testimony of Dr. A. C. Love, of Donaldsonville, Louisiana, p. 130. The Rice Fever. Reports of Drs. Brown and Davidson on the fever which prevailed in Plaquemines Parish, p. 135–140. The Fever on the Lower Mississippi, p. 144–190.

There were detained at this station during the past year, for purification, disinfection and fumigation 151 vessels, among which were but four having any sickness on board; the patients were all transferred to the hospital for treatment, with the following results:

First. The steamer Chilian, one case intermittent fever. Discharged.
Second. The bark Excelsior, after return from the city, three cases yellow fever. Two died, one recovered.
Third. The steamer Tantalon, one case bilious remittent. Discharged.
Fourth. The steamer Wanderer, one case rubeola. Dissharged.

Of the 151 vessels detained at quarantine, there were in January, 1; April, 2; May, 23; June, 21; July. 29; August, 17; September, 27; October, 29; November, 2.

NUMBER AND CLASS OF VESSELS PASSING THIS STTION DURING EACH MONTH OF 1880.

	Steamships	Ships.	Barks.	Brigs.	Schooners.	Total.
January	47	9	47	4	11	118
February	60	16	44	5	18	143
March	43	12	31	6	20	112
April	45	7	27	3	21	103
May	48	3	23	6	20	100
June	40	2	23	1	10	76
July	45	3	23	2	7	79
August	44	4	9	0	3	60
September	64	12	6	0	7	89
October	65	14	28	1	7	115
November	55	24	40	5	10	134
December	58	15	56	6	7	142
Total	614	121	356	39	141	1271

With the hope that we may have a healthy and prosperous year before us, I remain,
Very respectfully your obedient servant,
J. F. FINNEY, M. D., Resident Physician.

REPORT OF DANIEL W. ADAMS, M. D., QUARANTINE PHYSICAIN RIGOLETS STATION.

To the Honorable the President and Members of the Board of Heath, State of Louisiana:

Gentlemen—A year of good health, yet prodigal of incident, has intervened since I had the honor to present my annual official report to your honorable body. Its events have vindicated your policy and seem steadily pointing the way to the security which quarantine requires in order to make it acceptable to trade and commerce.

During the past season 1170 vessels in all have been inspected by me at the Rigolets Station. Of these 26 were steamers and 1144 were schooners. Of the 1144 thirty-six (36) had been acting as lighters to foreign vessels. Of the 26 steamerr two (2) had been acting as lighters to foreign vessels.

The Mexican steamer Victoria, from Frontera Tobasco, Mexico, arrived July 6, 1880. She had reported at the Jackson County, Quarantine Station, Pascagoula, and had remained there seven days, was there imperfectly disinfected. I found on removing the limber boards—which I learned had not been removed for years—the bilge water offensive, and much filth from decayed lumber. President Jones was present at the inspection.

DATES OF ARRIVALS FROM INFECTED PORTS.

American schooner Henriette Esch, arrived May 30, 1880 from Vera Cruz *via* Tuspan.
Mexican schooner Norma, arrived from Tobasco, June 9, 1880.
American schooner Mary A. Rushing, from Tuspan, July 31, 1880.
American schooner Henrietta Esch, from Tuspan, Mexico, August 4, 1880.
American schooner Annette, from Havana, Cuba, August 9, 1880.

These schooners were detained 72 hours, and thoroughly cleansed. On the latter of these trips of the Henrietta Esch, a sick person was landed and placed in the hospital—a case of intermittent fever yielding readily to treatment.

The employment of a watchman has had a beneficial effect on quarantine discipline and in some degree supplied the wants of a collector of permits at each one of the basins.

For the ensuing season a new Whitehall yawl, clincher built, will be required, 16 feet long, 5 feet beam, copper fastened and riveted.

The property on hand is carefully packed and left in charge of the ordinance sergeant at Fort Pike. I have the honor to be gentlemen. Very respectfully yours, etc.,

DANIEL W. ADAMS, M. D.,
Resident Physician, Rigolets Quarantine.

ATCHAFALAYA QUARANTINE STATION.

By the seventh section of the act of 1855, "To establish quarantine for the protection of the State," it is ordained that there shall be a quarantine "on the Atchafalaya River, two miles below Pilot's Station, at the mouth of Wax Bayou." It is also enacted that "There shall be no permanent building erected at Pilot's Station, on the Atchafalaya River, but the Board of Health shall use as an hospital for the reception of the sick, hulls and cabins of steamboats." In the twenty-fifth section of the same act it is further stated that "At the Atchafalaya Station, a good shed shall be provided for the freights of vessels to be unloaded. The Board of Health shall receive the transfer of such lands as may be necessary at the Atchafalaya River, in the same manner and under the same conditions as are required by section one, and all plans, specifications and contracts for the above buildings, shall be submitted to and approved by the Governor of the State; provided that the cost of said buildings shall in no case exceed the amount hereinafter appropriated."

In accordance with the acts of the General Assembly and the proclamation of the Governor of Louisiana, a quarantine strictly governed by the rules and regulations of the Board of Health, was maintained on the Atchafalaya River until the first of November. During the entire period of the maintenance of the quarantine no infected vessel arrived at the station, and Morgan City remained free of contagious and infectious diseases.

REPORT OF N. L. SIGUR, M. D.,

RESIDENT PHYSICIAN, ATCHAFALAYA QUARANTINE STATION.

MORGAN CITY, January 25, 1881.

Board of Health, State of Louisiana:

Gentlemen—I respectfully submit the following report of the quarantine operations at the Atchafalaya Station during the year 1880:

On May 29, 1880, I inspected the steamship Gussie, of the Morgan Line, Captain Richard Hill, 998 tons, which left Havana, Cuba, in ballast, on the twenty-sixth of the same month.

On August 8th, the steamship Wm. G. Hewes, also of the Morgan Line, Captain Richard Hill, 1117 tons, which left Havana, Cuba, in ballast, on the fourth of the same month.

On August 31st, the schooner Adolphe Flake, Captain Edwin L. Snow, 48 tons, which left Tampico, Mexico, with a cargo of honey and dye wood.

On October 6th, the steamship Gussie, above mentioned, which left Havana, Cuba, on the second of the same month.

All of which I have inspected, fumigated, disinfected and detained the time prescribed by the law. It affords me the greatest pleasure to state that I found them all in excellent sanitary condition and their crews in excellent health.

I am, very respectfully your obedient servant,

F. L. SIGUR, M. D.,

Quarantine Officer at the Atchafalaya Station for 1880.

QUARANTINE.

WORK ACCOMPLISHED DURING 1880 BY LOUISIANA BOARD OF HEALTH.

During the year 1880, 1271 vessels were inspected, detained, cleansed and fumigated, in all cases deemed necessary for the public welfare.

The aggregate tonnage of this fleet reached over 2,000,000 tons, and was believed to be the largest received through the Mississippi Quarantine Station since the American Civil War.

The activity of the commerce of New Orleans, during 1880, is also shown by the fact that 1,170 vessels were inspected at the Rigolets Quaratine Station.

The total exports and imports for the year 1880 amounted to $102,528,336, which is greater than any year during the past ten years, as will be shown by the following statistics of the United States Custom House.

Through the courtesy of the Collector of the Port of New Orleans, we have been permitted to extract the following general results from the records of the United States Custom House:

TOTAL VALUE OF COMMODITIES EXPORTED AND IMPORTED AT NEW ORLEANS FOR THE FOLLOWING PERIODS.

YEARS.	EXPORTS.	IMPORTS.	YEARS.	EXPORTS.	IMPORTS.
1870	$101,385,257	$17,705,655	1876	$ 81,387,836	$ 9,634,253
1871	93,532,797	18,333,530	1877	70,270,593	11,340,752
1872	95,950,942	30,000,377	1878	74,366,388	8,725,751
1873	100,930,307	18,825,527	1879	81,105,822	8,259,606
1874	87,974,797	13,472,483	1880	102,528,366	11,800,977
1875	76,695,700	11,637,168			

The year 1880 was distinguished by the absence of contagious and infectious diseases, and more especially of yellow-fever, not only in New Orleans and Louisiana, but throughout the Valley of the Mississippi.

The total deaths from all causes in the city of New Orleans during the year 1880 numbered 5,623, and the death rate per 1,000 inhabitants was 25.98. Death rate per 1,000 whites, 22,87; per 1,000 colored, 34.84.

The death rate of New Orleans during 1880 will compare favorably with that of any American or European city of similar population; and was much less than that of the city of Memphis.

The statistics recorded in the annual report of the Board of Health of the State of Louisiana for the year 1880, show that there has been an evident decline in the death rate of New Orleans during the past twenty years—1860–1880. These statistics also show that the establishment of quarantine at the mouth of the Mississippi River, and at the Rigolets and on the Atchafalaya, has tended to diminish the frequency of yellow-fever epidemics. Thus, from the establishment of the quarantine at the mouth of the Mississippi River in 1855 to the end of 1880 (twenty-five years), there have been but three epidemics of yellow-fever of any magnitude, namely: in 1858, 1867 and 1878; while in the preceding thirty-nine years (1817-1855) no less than nineteen severe visitations of yellow-fever have been recorded.

During the year 1880, the Board of Health of the State of Louisiana not only met all its liabilities from its legitimate revenues established by the acts of the Legislature, but expended several thousand dollars on the repair and equipment of the Mississippi Quarantine Station.

The Mississippi Quarantine Station, with its capacious government fire-proof warehouse, has justly been regarded as the equal, if not superior, of any similar establishment south of New York.

Notwithstanding the false alarms concerning yellow-fever; notwithstanding the prejudice of surrounding States against local Boards; notwithstanding the hostile forces arrayed against the Board of Health, within and without this city, it is an established fact, that with the exception of the years 1827 and 1879, the year 1880 was the healthiest in the past ninety-four years; and that the foreign commerce of New Orleans was larger in 1880 than in any previous year since the close of the civil war.

OUTLINE OF THE QUARANTINE OPERATIONS OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA FOR 1881.

MISSISSIPPI QUARANTINE STATION.

The dilapidated condition of the hospitals, wharf and boat house, and the neglected and undrained and unprotected condition of the grounds of the Mississippi Quarantine Station, were subjects of constant consideration and anxiety, and the earliest opportunity was embraced to urge this subject upon the attention of His Excellency, Governor Louis A. Wiltz, and of the Board of Health. The chief measures advocated are stated in the following correspondence:

NEW ORLEANS, October 23, 1880.

Hon. Louis A. Wiltz, Governor of the State of Louisiana:

Dear Sir—I have the honor to request your Excellency to examine the accompanying letter, embracing the request of the Board of Health of the State of Louisiana that the State Board of Engineers should examine the quarantine stations and the drainage canals of New Orleans, and report the necessary improvements and estimates of expenses.

Such information will prove of value to the Board of Health, and the indorsement of your Excellency is most respectfully requested by

Your obedient servant,

JOSEPH JONES,
President Board of Health, State of Louisiana.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, October 22, 1880.

Col. Henry B. Richardson, Chief Engineer, State of Louisiana:

Dear Sir—At the regular meeting of the Board of Health, on the twenty-first instant, the President directed the attention of the Board to two subjects which he regarded as of the utmost interest to the sanitary advancement and welfare of the State of Louisiana and the city of New Orleans.

1. The quarantine stations needed repair and improvements. The eyes of the people of the entire valley were upon the Board of Health of the State of Louisiana, and more especially upon the condition and conduct of the Mississippi Quarantine Station. Unless the Board of Health take immediate and decided action looking to the thorough equipment of the quarantine stations, the distrust and abuse on the part of the surrounding States may be even greater than during the present summer and autumn. The most compe-

tent authority to give advice to the State Board of Health on this subject is the State Board of Engineers, and the President urges immediate and decided action on the part of the Board of Health, requesting their aid and advice upon this important subject of the repairs and improvements of the quarantine stations.

2. The drainage canals of the city of New Orleans are choked up with filth, and need dredging and cleansing. This question is of paramount importance to the sanitary welfare of New Orleans, and, in the opinion of the President, the Board of Health should, at the earliest practicable moment, investigate the entire subject, and urge the City Council to immediate and energetic action.

In accordance with the suggestions of the President of the Board, the following resolutions were unanimously adopted:

"*Resolved*, That the State Board of Engineers be requested, at their earliest convenience, to examine and report upon the condition of the several quarantine stations, and especially upon the condition of the Mississippi Quarantine Station.

"*Resolved*. That the State Board of Engineers be also requested to report in detail the necessary repairs and improvements, with accurate estimates of the cost of the same.

"*Resolved*, That the President of the Board of Health be authorized to request the State Engineers and the City Surveyor to inspect the drainage canals of New Orleans, and to report on their condition and prepare estimates of the costs of dredging and cleaning canals."

As President of the Board of Health, I would most earnestly urge upon the State Board of Engineers the execution of this investigation, which will render material aid to the Board of Health in the perfection and execution of the quarantine and health ordinances of the State and city.

Respectfully, your obedient servant,

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

After a careful examination of the quarantine stations by the State Engineers and the President, and after advertising for sealed bids, the contract of repairing the hospitals and physicians' quarters and the building of a suitable boat-house and substantial wharf, was awarded to Messrs. Hanley, Kevlin & Garrett, of Algiers.

The following work was completed and accepted on or about the 1st of May, 1881:

A substantial wharf, 260 long by 10 feet wide, with pier-heads, 60 by 30 feet, with depth of water on river front of 25 feet, cost $1400. This wharf is one of the finest in the State, and is considered equal, if not superior to the wharf erected by the United States Government, two years before, at a cost of $5000.

Connected with the quarantine wharf a commodious boat-house has been erected 50 by 40 feet, elevated about 45 feet above the water, surmounted by an octagonal tower 14 feet in height, and ten feet in diameter. The sides of this tower are of plate-glass, and a beacon light is kept burning from sundown to sunrise, for the guidance of vessels, and can be seen far below Forts St. Philip and Jackson. A watchman is kept on duty all night, and in foggy and stormy weather the quarantine bell is tolled. The tower serves the purpose of a valuable light-house to all vessels coming up the Mississippi at night, and is believed to be the only light-house between the passes and New Orleans.

The President of the Board of Health also purchased for this station, a strong "first-class" boarding yawl, about 27 by 6 feet, made of white cedar, with black walnut seats and facings, all the fastenings and appointments being of brass and copper. A strong boarding boat of this nature, or better still, a steam launch, is considered as absolutely necessary to the efficiency of the Quarantine service, which in the Mississippi River, is of the most dangerous character, requiring active and experienced officers and boatmen.

The boarding of vessels in this turbid and rapidly rolling river, is especially dangerous in dark and stormy nights. The fever and small-pox hospitals have been thoroughly repaired, supplied with cisterns and painted within and without, and a barb-wire fence of substantial character, 3110 feet in length, has been erected on the side and back levees. The physician's residence has been thoroughly repaired and painted, and surrounded by a substantial fence, 350 feet square.

In accordance with the formal resolutions of the Board of Health, the President paid Messrs. Jerome Hanly, A. G. Garrett and H. Kevlin, the sum of $5695, immediately upon the completion and acceptance of the works and repairs as above described; and the entire amount of money paid (in hard cash), by the Board of Health for the repairs at the Mississippi Quarantine Station, and for supplies, disinfectants and salaries of officers, boatmen, watchman and hospital keeper, during 1881, was $18,104 08. The expenses of the Atchafalaya Quarantine Station were $690 and of the Rigolets Quarantine Station, $1536 93. On the other hand the total receipts from all the quarantine stations, by inspection and fumigation fees, was only $18,555.

INSPECTION OF INFECTED SHIPS—YELLOW FEVER IN RIO DE JANEIRO DURING 1880 AND 1881, AND THE MEASURES INSTITUTED FOR THE DISINFECTION OF THE VESSELS ARRIVING AT THE MISSISSIPPI QUARANTINE STATION FROM THIS PORT.

The extent and value of the coffee trade and the intimate relations of New Orleans with Rio de Janeiro, and the important fact that more than one destructive epidemic in past times had been referred to the coffee ships

of the latter port, necessitated the continuance of the system of inspection, disinfection and shifting of cargoes, instituted by the President, immediately after the re-orginization of the Board of Health, on the eighth of April, 1880.

The following facts with reference to the prevalence of yellow fever and other diseases in Rio de Janeiro were communicated monthly to the Board of Health by the Consul General, Thomas Adamson.

In Rio de Janeiro there occurred in the month of November, 1879, total deaths from all causes, 850—yellow fever 9, small-pox 11, enteric or typhoid fever 20, pernicious fever 22; month of December, 1879, total deaths, 915—yellow fever 18, small-pox 9, enteric or typhoid fever 13, pernicious fever 43, consumption 153; month of January, 1880, total deaths, 1062—yellow fever 133, small-pox 2, enteric or typhoid fever 14, scarlet fever 5, pernicious fever 54, consumption 166; month of February, 1880, total deaths, 1352—yellow fever 484, small-pox 1, typhus fever 1, typhoid or enteric fever 19, scarlet fever 1, pernicious fever 76, consumption 140. Present estimated population of Rio de Janeiro, 330,000. March, total deaths, 1389—yellow fever 468, typhus fever 3, enteric or typhoid fever 17, pernicious fever 70, consumption 153; month of April, 1880, total deaths, 1008—yellow fever 2, enteric or typhoid fever 12, pernicious fever 40, consumption 150; month of May, 1880, total deaths, 914—yellow fever 105, typhoid fever 14, pernicious fever 28, consumption 148; month of June, 1880, total deaths, 812—yellow fever 55, typhus fever 1, typhoid fever 8, pernicious fever 24, consumption 143; month of August, 1880, total deaths, 743—yellow fever 9, September, 1880, total deaths 758—yellow fever 4, small-pox 1, typhoid fever 3, pernicious fever 24, pulmonary consumption 168; month of December, 1880, total deaths, 812—yellow fever 14, small-pox 8, typhoid fever 14, small-pox 8, typhoid fever 12, scarlet fever 1, pernicious fever 26, consumption 141.

DEATHS OCCURRING IN RIO JANEIRO, DURING THE FIRST SIX MONTHS OF 1881, FROM ALL CAUSES, AND FROM THE DISEASES SPECIFIED, CONSOLIDATED FROM THE REPORTS OF THOMAS ADAMSON, CONSUL-GENERAL, UNITED STATES.

Diseases.	January.	February.	March.	April.	May.	June.
Yellow Fever	31	54	42	23	24	13
Consumption	153	131	125	137	140	137
Pernicious Fever	30	39	40	24	28	16
Small-pox	15	4	2	5	1	2
Typhoid Fever	11	13	20	14	8	8
Typhus Fever	....	1	....	1	3	....
Scarlet Fever	....	2	....	....	....	....
Diphtheria	....	....	....	....	....	....
Cholera	....	....	....	....	....	....
Other causes	629	672	739	613	653	620
Totals	869	916	968	817	857	796

July, 1881, total deaths, 773—yellow fever 9, small-pox 2, typhoid fever 4, pernicious fever 15, consumption 134; August, 1881, total deaths, 769—yellow fever 5, small-pox 5, enteric or typhoid fever 5, pernicious feyer 20, consumption 126; September, 1881, total deaths, 669—yellow fever 1, small-pox 9, typhoid fever 8, pernicious fever 14, consumption 116; October, 1881, total deaths, 803—yellow fever 2, small-pox 18, typhoid fever 17, pernicious fever 17, consumption 146. Estimated population of Rio de Janeiro, 330,000.

The prevalence of yellow fever in Rio de Janeiro received prompt and earnest attention. The vessels arriving with coffee from this port were detained at the Quarantine Station for periods ranging from twelve to twenty days; the resident physician was ordered to shift the cargoes into the government warehouse by acclimated laborers (that is, by men who had suffered with yellow fever), natives of New Orleans.

The crews were not allowed to handle the cargo or to descend into the hold.

The men were carefully examined by the President of the Board of Health, an oath administered as to the date and nature of the preceding attack of yellow fever, and a record of the essential facts made before they were permitted to leave New Orleans for the Mississippi Quarantine Station.

The ships from Rio and other infected ports were thoroughly cleaned and fumigated, ventilated and disinfected; the coffee in the warehouse was also subjected to heavy fumigation with sulphurous acid gas.

When the coffee arrived in New Orleans it was again disinfected and fumigated in the warehouses where it was stored.

MISSISSIPPI QUARANTINE STATION.

QUARANTINE STATION, MISSISSIPPI RIVER, LA.,
December 1, 1881,

Dr. Joseph Jones, President of the Board of Health of the State of Louisiana:

Dear Sir—I would respectfully submit the following report of vessels arriving at and passing this station during the eleven months ending November 30, 1881; also, number of quarantined, number of sick admitted to hospital, and list of vessels required to discharge their cargoes for the purpose of thorough disinfection.

Your obedient servant,

J. F. FINNEY, M. D., Resident Physician.

VESSELS PASSING MISSISSIPPI QUARANTINE STATION FOR ELEVEN MONTHS ENDING NOVEMBER 30, 1881.

	Steamships.	Ships.	Barks.	Brigs.	Schooners.	Total.	
January	55	4	35	7	11	112	
February	36	15	20	7	14	92	
March	48	10	44	3	9	114	
April	53	12	35	3	16	119	
May	61	8	20	2	16	107	Quarantine of 72 hours.
June	36	4	14	1	10	68	
July	37	2	12	2	13	63	Quarantine of 240 hours.
August	29	5	7	.....	4	45	
September	36	5	7	3	9	60	
October	60	.....	7	1	11	87	Oct. 15th—Quarantine of 72 hours
November	47	14	18	2	9	90	Quarantine raised.
Total	498	87	219	31	122	957	

VESSELS QUARANTINED.

MONTHS.	Bremen	Rio.	Havana	Vera Cruz.	Colon.	Other Ports.	Total.	
January	1	....	....	....	....	....	1	Other ports include Laguayra, Progresso, Coatzacoalcos, Martinique, Pointe a Pitre, Sagua, la Grande, Matanzas, and Santiago de Cuba.
February	....	....	....	....	....	....	....	
March	....	2	....	....	....	....	2	
April	....	3	....	....	....	....	3	
May	....	3	14	6	1	1	25	
June	....	1	10	8	2	2	23	
July	....	2	2	6	....	2	12	
August	....	2	5	5	1	2	15	
September	....	2	3	3	....	4	12	
October	....	4	12	8	....	1	25	
November	....	....	....	....	....	....	....	
Total	1	19	46	36	4	12	117	

ADMITTED TO HOSPITAL.

Date.	Diseases.	No.	Vessel.	From.	Result.
January 11	Small-pox	1	Steamship Nurnberg	Bremen	Discharg'd
May 27	Bilious fever	1	Steamship Whitney	Vera Cruz	Discharg'd
July 12	Wound of foot	1	Steamship Bolivar	Vera Cruz	Discharg'd
August 23	Chagres fever	1	Steamship Historian	Colon and West Indies.	Discharg'd
August 26	Colitis	1	Steamship Historian	Colon and West Indies.	Discharg'd
August 26	Malarial fever	1	Steamship Historian	Colon and West Indies.	Discharg'd
August 27	Continued fever	1	Bark St. Olaf	Rio de Janeiro	Discharg'd

The Steamship Nurnberg had on board 85 crew and 173 passengers from Bremen. Arrived on January 11, 1881, with one case of small pox on board. The crew and passengers had been vaccinated by Dr. Noer, the accomplished surgeon of the ship, on January 5th. Not one case presented the least sign of successful vaccination. Everybody on board was re-vaccinated at this station, and the case removed to the hospital. Of the 257 vaccinated, 254 were secondary vaccinations; 3 were primary vaccinations; 98 secondary vaccinations were successful; 3 primary vaccinations were successful.

LIST OF VESSELS LOADED FROM RIO DE JANEIRO AND VERA CRUZ, ARRIVING AT THE MISSISSIPPI QUARANTINE STATION, AND REQUIRED TO DISCHARGE CARGO FOR PURPOSES OF BETTER PURIFICATION AND DISINFECTION OF VESSEL AND CARGO.

Date of Arrival at Mississippi River Quarantine. 1881	Vessel.	From	Date of Departure from Port	Number of Bags of Coffee.	Sick on Board and Sent to Hospital in Rio.	Released from Quarantine.
March 14...	Bark Maria.....	Rio.....	December 12...	5,000	2	March 27
" 14...	Bark Stephanie ...	Rio.....	" 17...	5,040	2	" 27
April 8...	Bark Eastern Chief.....	Rio.....	January 27...	7,064	5	April 19
" 9...	Bark Nancy Holt.....	Rio.....	February 21...	6,000	1	" 23
" 9...	Brig Finnrid	Rio.....	" 6...	5,500	5	" 23
May 1...	Bark Just, H. Ingersoll..	Rio	March 13...	11,160	.....	May 13
" 3...	Steamship Nasmyth.....	Rio.....	April 12...	28,054	.....	" 15
" 10...	Bark Venice.....	Rio.....	March 21...	10,500	1	" 24
June 6...	Brig Anita Owen.....	Rio.....	" 31...	1,006	.. ..	June 19
July 10...	Bark Ellen Holt.....	Rio.....	May 23...	5,671	.....	July 26
" 30...	Ship Virginia.....	Rio.....	June 12...	4,600	.....	August 13
August 17...	Bark Glitner.....	Rio.....	July 4...	5,000	.....	" 31
" 22...	Bark St. Olaf.	Rio.....	" 4...	4,610	.....	September 5
September 19...	Schooner Seguin.....	Vera Cruz.	September 7...	2,328	.....	" 30
" 27...	Brig John Wesley.....	Rio.....	August 15...	6,961	.....	October 17
" 30...	Bark Berville.....	Rio.....	" 13...	5,000	.....	" 10

QUARANTINE STATION, MISSISSIPPI RIVER,
January 5, 1882,

Dr. Joseph Jones, President of the Louisiana State Board of Health:

Dear Sir—I herein forward you a classified list of vessels passing this station during the month of December, which completes the year 1881:

NUMBER OF VESSELS PASSING MISSISSIPPI RIVER QUARANTINE STATION.

Months.	Steamships.	Ships.	Barks.	Brigs.	Schooners.	Total.
November..	47	14	18	2	9	90
December..	43	5	23	2	10	85
Total....	90	19	43	4	19	175

You will see by the total arrivals (1042) that we have had 229 vessels less than the year previous, which is a great decrease, and has diminished our receipts nearly $4000. The falling off is due to the partial failure of crops, the low rate of freights, and the inauguration of "ten days' quarantine" during the past year; however, I think we should thank a kind Providence, and congratulate ourselves on the fact that we have passed another year without any infectious or contagious disease passing the station.

Very respectfully, your obedient servant,

J. F. FINNEY, M. D., Resident Physician.

REPORT OF W. H. CARSON, M. D., RESIDENT QUARANTINE PHYSICIAN, RIGOLETS STATION, FORT PIKE, LOUISIANA

To the Honorable, the President and Members of the Board of Health, State of Louisiana:

Gentlemen—I have the honor to present the following for your consideration, as a report of my labors at the Rigolets Quarantine Station, Fort Pike, Louisiana, during the past quarantine season of 1881.

The quarantine station was opened and placed in working order commencing May 6, 1881, and ending October 31, 1881.

The total number of vessels noted and reported as passing the station, undergoing boarding and inspection and receiving permits to proceed, amounts to one thousand three hundred and fourteen (1314), of which number seventy-nine (79) were steam vessels and one thousand two hundred and thirty-five (1235) were schooners, sloops and luggers.

The crews of these vessels numbered, in the total, four thousand seven hundred and forty (4740), and the passengers numbered two thousand five hundred and ninety (2590.

I am pleased to state that, during the entire season, no vessel visited this station with any evidence of infection of any nature or with the slightest suspicion of such condition.

I would state in this connection that but four vessels, large schooners, generally termed "outsiders,"; the Emma White, Henrietta Esch, Geo. W. Dill and the Stella, presented themselves at this station during the season from ports of departure where any possible suspicion of infection was warrantable or justifiable, the first named coming from Cedar Keys, Florida, the remaining three from Tuxpan, Mexico. All received the usual and customary sanitary attention of cleansing, disinfection and fumigation. All were in ballast with iron and without any porous material calculated to convey infectious or contagious disease.

On the thirty-first of August, 1881, I was informed by telegram from President Jones of the anticipated approach of an infected vessel, the schooner "Vernal," clearing from a Mexican port; ordering her detention subject to orders, and ordering me to report the condition and all other matters of importance; the vessel, however, never appeared at the station, but it is reported was obliged to put in at Mobile Bay in distress.

The above about completes all that can be said in regard to the practical quarantine operations at this station for the season just closed.

In regard to the revenue, the collection of quarantine fees, the difficulty still exists, with no tendency towards improvement, but rather to grow worse.

The kindly expressions from members of the Finance Committee, as well as other members of the Board, to the effect that any opinion of mine relative to the revenues and finances of the station would be extremely acceptable, and that all consideration would be shown any suggestion presented, justifies as well as induces me to make the following statements relative to the collection of quarantine fees and its co-attending features.

The schedule of quarantine fees has been changed more than once during the past season, and on each occasion reduced in a spirit of liberality and kindly feelings to satisfy all parties concerned, and hoping to make the collection of quarantine fees by a small tax, as well as to lessen, I am informed, the delay and difficulty of collection by the boarding officer.

The various reductions of the schedule of fees have still failed to give the satisfaction desired and achieve the result desired to be obtained, and again does indirectly an injustice to the resident physician, which, I am quite satisfied, never entered into their reckoning when framing the schedule; a condition of affairs and annoyance which the committee never intended, and would not have permitted had they any knowledge of the fact, or their attention been called to it. The point I refer to, and to which I would call the special attention of the Board, that as the last revised schedule of quarantine fees now stands adopted, August 22, 1881, wherein the schedule of fees for the second time revised, steamboats and schooners are rated and taxed at one dollar, a deduction from five to one in behalf of the steamboat, and a dollar and a half in behalf of the schooner, from that charged in the opening of the quarantine season.

This, the last reduction, still failed to give the satisfaction desired, or to increase the revenues of the station, and created additional burdens, fatigue and danger that the gentlemen never anticipated, or for a moment intended, inasmuch as vessels that previously would not pay a copper in the *day*, and that formerly would lay over and anchor at *night*, now deemed it to their interest and advantage, when caught by nightfall, to pay this modicum of a dollar and rouse the resident physician at all hours, and in any weather, to board, inspect and grant them permit and release. These vessels previously, when in quarantine after sunset, when the resident physician was legally relieved from boarding, would come to an anchor and await for the morrow's sunrise and then proceed defiantly on, and without impost or payment of the schedule tax, to their port of entry.

It has been understood and customary for the Resident Physician, in many seasons past, to board and inspect all vessels after sunset, so requesting, upon their payment of the schedule rate of quarantine tax fee—no extra charge being allowed or provided for. The law in regard to quarantine does not call or compel the Resident Physician to board or inspect after sunset, but in view of the small revenue attending the station it has been, as I have before remarked, the custom of the Resident Physician to board and inspect, facilitating commerce as well as collecting the tax fee not otherwise assured.

This, in the main, was reasonable and without objection, and such boarding and collection of tax fees has been the practice, and still continues to be. And now that the situation has, I believe, been intelligently explained. I do not doubt but what some consideration and relief is requisite in the matter.

When you take into consideration that the Resident Physician is aroused often three, four and five times a night, at any time and in all weather, to board and inspect vessels (that, as I before remarked, would not pay a copper in the day), his boatmen being relieved and assured of their time and rest, the inconsistency is manifest. I have presented this unlooked for annoyance as full and complete as possible, satisfied that the gentlemen of the committee framing this schedule of tax fees and now in force, all of whom I am personally acquainted with and entertain the highest respect for, will provide a suitable remedy.

It is to be hoped that, in the near future, some improvement in the surety and mode of collection of this quarantine tax fee will be assured. If congressional action is necessary in the premises, it should be early and promptly applied for, soliciting their favorable action to relieve much of the embarrassment and indignity attending the present form of collection. A quarantine fee bill, without compulsory and without legal support, is superfluous, embarrassing to the official and in the main inoperative. To depend upon the benevolence, charity and sanitary interests on the part of owners of vessels of this class, in protecting the health of the community in general by the payment of a minimum quarantine tax, is deplorable, deceptive and untrustworthy. No quarantine fee bill should be framed that cannot be collected and enforced under compulsion if necessary. Although my quarantine fee collections twice exceed any for many years past, but in a slight degree represent what might be collected. The station should unquestionably be self-supporting, and yield under more favorable circumstances no mean surplus.

I would especially call the attention of the Board to the unsuitable location, and the attendant requirements necessary to carry out an effective and proper quarantine. The attention of the board has been called to the many wants and deficiences existing at this station, by most of my predecessors, and the same condition still exists, only in a more intensified and aggravated form. That the location is unsuitable is undeniable; though within an hour or so between the Quarantine Station and New Orleans, no assurance can be placed in the character of communication, the nearest telegraphic communication and only accessible by water, is four or five miles distant and can only be reached in the calmest weather, not considering the course or strength of tide or the disturbing features resulting from the detailing from the small force employed to send a telegraphic message such a distance. The regular mail reaches the station once a week and is extremely uncertain and unsatisfactory, one official communication often accompanying another though differing in dates many days, yet arriving at the station the same moment.

The quarters of the boatmen are in a most deplorable condition, and it is safe to assume that, on the opening of the coming season, they will be positively uninhabitable. The wharf is in a most wretched and wrecked condition and in a short time will have wholly disappeared.

In view of the many deficiencies, the unsuitable location, the deplorable condition of the buildings and the poor and inadequate facilities for boarding, I would respectfully suggest to the Board some location in

the immediate locality of the Rigolets Bridge, where the better supervision of vessels could be obtained, more sure and quick mail facilities assured, and in every way the efficiency of the "Rigolets Quarantine Station" be improved.

A new white-hall boat has been furnished the station the past season, allowing the old boat, some years in use, to be repaired and made serviceable, only however, in mild weather. The new boat has been found in every way serviceable and satisfactory.

Thanks are due Mr. Thomas Cooney, Ordinance Sergeant, U. S. A., in charge of Fort Pike, Louisiana, for the safety and preservation of a quantity of quarantine stores deposited in the casements of the fort. On the sixth, seventh and eighth of February last a violent storm raged, backing up the waters to such an extent and height as to flood cellars, gun-rooms and casements to the depth of two or three feet, relieving the quarantine yawl of all of her supports and washing her out to the parade ground. The other stores, much of which was perishable, were secured and placed in safety, but a barrel of copperas escaped and was totally dissolved in the waters, not a pound of the chemical remaining. This constitutes the greatest loss, and much credit is due Sergeant Cooney, in preventing further damage and loss, and his disinterested conduct in this connection. All stores now on hand I have left in his charge, he of course assuming no direct responsibility.

These stores and all other property have been carefully packed and appropriately stored, a complete and detailed list of which is herewith furnished.

In conclusion I would bear testimony to the trustworthiness and efficiency of my subordinates at the station, each in their respective capacities of boatmen and watchman: Joseph, Frederick and Lewis, boatmen, and Loring D. Allen, watchman, all rendering full satisfaction and strict observance of discipline.

I have the honor to be, gentlemen, very respectfully, your obedient servant,

W. H. CARSON, M. D.,
Resident Physician, Rigolets Quarantine.

REPORT OF N. L. SIGUR, M. D., RESIDENT PHYSICIAN, ATCHAFALAYA STATION.

MORGAN CITY, February 9, 1882.

To the President and Members of the State Board of Health, New Orleans, La.

Gentlemen—I have the honor to submit to you my official report of the operations at this station during the quarantine season of the past year ending October 31, 1881.

The number of vessels frequenting this port was about the same as that of the preceding year, one hundred and nineteen steamships and eighty-one schooners, hailing chiefly from Galveston, Indianola and Brazos. The ships carried, besides their cargo and regular crew, a great many passengers, about ten thousand in number, showing at this point a great increase in travel. The schooners had only their crew and cargo. All were inspected upon their arrival, and it affords me pleasure to state that no sicknesss of an epidemic or contagious character has manifested itself this season, either at the port of Brashear or in Morgan City.

Out of so many vessels, only one came from an infected place. This was the steamship Whitney, which left Vera Cruz on the twenty-sixth of October, with full cargo, thirty-nine crew and fifteen passengers. Although provided with a clean bill of health from the Mexican authorities, she was stopped by me upon her arrival at quarantine station on October 30, and it was only after the required inspection, detention and fumigation, that she was allowed to proceed to Morgan City. I found the ship in good sanitary condition, the crew and passengers in excellent health, with the exception of an old English gentleman who labored under a severe attack of malarial fever which yielded readily to the free administration of the sulphate of quinine.

Hoping that the coming year will prove as healthy as the last, I have the honor to subscribe myself,

Very respectfully, your obedient servant,
N. L. SIGUR, M. D.,
Quarantine Officer, Atchafalaya Station, for 1881.

GENERAL REVIEW OF THE FINANCIAL OPERATIONS OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA. 1870-1881.

In the history of Louisiana no Board of health has to meet graver responsibilities, and at the same time has had less support from the State and city governments.

In proof of this proposition, we have to look, on the one hand, to the large sums received by former Boards of Health from the Legislature and City Council and the results accomplished, and, on the other hand, at the magnitude of the work which has devolved upon the present Board, and which, in virtue of the most rigid economy, its judicious expenditures have been successfully accomplished.

In 1869 the Board of Health received from the Legistature of Louisiana $19,258 85; in 1870, $4625; 1871, $1630; 1872, $2916; 1873; $3561; 1875, $18,000; 1876, $6751; total received by the Board of Health from the Legislature for the support of quarantine during the seven years specified, $56,735 85.

Amounts paid by the city of New Orleans for disinfectants ordered by the Board of Health: In 1870, $2851 77; 1871, $1448 21; 1872, not recorded; 1873, $16,069 83; 1874, $2482 35; 1875, $12,376 25; total paid by the city of New Orleans for disinfectants during five years, $35,128 51.

The amount stated, $56,735 85, as paid by the Legislature for the support of quarantine during the years specified, 1869-1876, represents the cash received from the sale of State warrants, the sums appropriated being far greater.

The amount stated, $35,128 58, as paid by the city of New Orleans for disiefectants, 1870-1875, does not include the outstanding claims. Neither does this amount include the salaries of the Sanitary Inspectors and Sanitary Police, paid by the city, which exceed the annual budgets of the City Council appropriated to the Board of Health during the past two years.

As a grand result of the appropriations by the Legislature for quarantine purposes, and by the City Council solely for disinfectants, during seven years, 1869--1876' we have the imposing sum of $91,864 36.

The preceding statements have been based upon the following statistics, which are presented in full, as they form important data in the history of the Quarantine and Sanitary Affairs of Louisiana.

RECEIPTS OF BOARD OF HEALTH, STATE OF LOUISIANA, 1869-1881.

YEARS.	Mississippi Quarantine.	Rigolets Quarantine.	Atchafalaya Quarantine.	Recording Births, Deaths and Marriages.	Coal Oil Inspection.	Privy Permits.	Interment Permits	Body Permits.	Building Permits.	Fines.	Miscellaneous.	State of Louisiana.	City of New Orleans.	Total.
1869	$23,960 00	$3,557 60	$1,027 50								$95 00	$19,258 85		$47,898 95
1870	21,012 50	2,947 60	950 00							$60 50	75 00	4,625 00		29,670 60
1871	23,704 50	255 00	1,160 00									1,630 00		26,149 50
1872	18,903 50	817 60	1,950 00							10 00		2,910 00		24,591 15
1873	18,336 69	1,635 65	1,989 00								19 50	3,561 60		25,541 84
1874	19,280 60	445 15	277 50								2 00			20,005 25
1875	13,801 50										13 60	18,000 00	$379 25	32,194 35
1876	19,347 02	674 15	40 00							61 00	215 60	6,751 00	187 78	27,276 55
1877	15,109 60	301 85	60 00	$1,389 32	$5,218 51	$175 80	$122 00	$90 00	$121 00		171 00		991 47	23,750 55
1878	19,931 00	93 50		2,827 79	8,839 55	569 50	221 00	142 00	128 00					32,752 34
1879	18,114 75	178 00	22 50	2,872 61	7,192 50	1,731 20	175 25	133 75	87 50		10 45		115 00	30,634 51
1880	21,872 00	174 75		3,106 69	6,725 00	2,610 50	58 00	49 75	14 00	100 00	48 00	1,181 25		35,939 94
To September 1, 1880	$12,692 00	$91 02		$1,673 58	$4,851 00	$2,264 25	$39 25	$33 25	$9 50	$100 00		$1,181 25		$22,835 10
To September 1, 1881	$12,222 00	$286 50		$1,731 54	$4,591 00	$1,721 25	$40 25	$35 00	$25 25					$20,652 79

EXPENDITURES OF BOARD OF HEALTH, STATE OF LOUISIANA.

Years.	Mississippi Quarantine.	Rigolets Quarantine.	Atchafalaya Quarantine.	Coal Oil Inspection.	General Expenses.	Total Expenditures.	Liabilities at End of Year.
1869	$15,019 85	$2,941 33	$1,474 60	.....	$8,310 89	$27,746 66	.....
1870	13,201 28	2,543 21	2,259 50	.....	8,950 01	26,954 00	.....
1871	14,285 19	1,940 64	1,308 10	.....	10,772 31	28,306 24	$1,800 60
1872	12,402 84	895 35	981 00	.....	10,377 49	24,656 68	5,362 00
1873	13,493 73	1,557 08	699 10	.....	9,893 74	25,643 65	6,000 00
1874	11,557 10	380 85	190 00	.....	7,325 10	19,453 05	10,826 36
1875	9,598 59	1,347 97	1,320 00	.....	17,098 73	29 365 29	4,539 50
1876	14,038 97	662 32	51 80	.....	7,854 32	22,607 41	4,199 61
1877	9,314 71	1,387 66	847 50	$1,556 00	8,934 46	23.040 33	May, 4,668 04
							3,003 63
1878	13,858 80	929 19	711 99	2,991 20	13,574 72	32,065 90	4,668 04
							1,399 34
1879	9,869 21	1,599 23	1,134 49	2,751 88	12,933 89	27,288 70	4,668 04
							2,957 73
1880	14,388 91	1,720 17	813 83	2,667 30	15,434 33	35,025 04	4,640 29
Up to Sept. 1, 1880	$8,305 93	$1,093 36	$437 50	$1,777 50	$8,242 88	$19,857 17	.....
Up to Sept. 1, 1881	$13,239 23	$1,019 50	$460 00	$1,686 75	$9,109 93	$15,515 41	.....

STATEMENT OF THE AMOUNT PAID BY THE CITY OF NEW ORLEANS FOR DISINFECTANTS, FROM 1870 TO 1881.

1870			
June	11—Pickles & Albers	$407 30	
July	20—Pickles & Albers	140 20	
September	15—F. B. Albers	24 00	
November	4—F. B. Albers	2,281 27	
	Total amount expended in 1870		$2,851 77
1871			
June	24—F. B. Albers	$77 12	
August	9—F. B. Albers	2,371 09	
	Total amount expended in 1871		$2,448 21
1872.			
No record.			
1873.			
April	29—Thos. Pickles	$136 20	
May	17—Dr. Albers	85 75	
June	21—Dr. Albers	29 90	
August	15—W. J. Kelly	189 98	
September	5—W. J Kelley	59 15	
October	14—W. J. Kelly	88 75	
December	28—W. J. Kelly	97 25	
1874.			
March	14—W. J. Kelly	323 75	
March	26—W. J. Kelly	50 00	
May	25—Page & Co	3,000 00	
June	6—Page & Co	3,000 00	
June	23—Page & Co	3,664 22	
June	23—Page & Co	5,205 92	
June	23—Page & Co	129 86	
1875.			
March	10—W. J. Kelly	10 00	
	Total amount expended in 1873		16,069 8[illegible]
1874.			
June	6—W. J. Kelly	$163 35	
June	30—W. J. Kelly	118 50	
October	21—W. J. Kelly	107 25	
1875.			
January	13—Thos. Pickles	92 00	
February	16—W. J. Kelly	54 30	
March	10—W. J. Kelly	349 35	
December	23—W. J. Kelly	1,165 60	
1876.			
May	3—W. J. Kelly	91 25	
1877.			
June	2—W. J. Kelly	340 75	
	Total amount expended in 1874		$2,482 35
1875.			
February	10—W. J. Kelly	$57 00	
March	16—W. J. Kelly:	1,000 00	
March	22—W J. Kelly	314 55	
April	15—W. J. Kelly	15 50	
June	30—W. J. Kelly	66 20	
July	20—W. J. Kelly	12 50	
July	31—Thos. Pickles	187 90	
September	22—Thos. Pickles	1,421 45	
1876.			
January	10—Thos. Pickles	2 80	
June	14—Thos. Pickles	1,151 66	
June	26—Thos. Pickles	13 69	
August	9—Thos. Pickles	212 35	
August	16—Thos. Pickles	204 45	
August	23—Thos. Pickles	433 00	
August	30—Thos. Pickles	43 13	
September	14—Thos. Pickles	1 00	
1878.			
July	1—Thos. Pickles	1,071 13	
July	26—Thos. Pickles	259 11	
August	2—Thos, Pickles	110 38	
1879.			
September	25—Thos. Pickles	68 55	
October	7—Thos. Pickles	500 00	
1880.			
October	7—Thos. Pickles	920 33	
November	4—Thos. Pickles	79 68	
December	29—Thos. Pickles	1,581 84	
December	31—Thos. Pickles	1,464 02	
1881.			
January	6—Thos. Pickles	1.184 14	
	Total amount expended in 1875		$12,376 35

1876.			
February	23—Thos. Pickles	57 20	
April	13—Thos. Pickles	29 00	
May	6—Thos. Pickles	459 75	
September	28—Finlay & Co	261 78	
October	5—Finlay & Co	175 68	
October	7—Thos. Pickles	364 10	
October	12—Finlay & Co	1,306 10	
October	15—Finlay & Co	110 96	
October	19—Thos. Pickles	360 00	
October	19—Thos. Pickles	384 00	
November	8—Finlay & Co	20 75	
December	7—Finlay & Co	14 26	
	Total amount expended in 1876		$3,543 58
1877.			
March	15—Thos. Pickles	$51 09	
May	11—Thos. Pickles	119 70	
June	16—W. J. Kelly	15 21	
August	16—Finlay & Co	2,856 18	
	Total amount expended in 1877		$3,041 18
1878.			
February	6—Finlay & Co	$63 59	
May	28—Finlay & Co	12 98	
August	2—Finlay & Thompson	14 24	
1879.			
August	16—Streubel & Co., for sprinkling disinfectants	235 00	
August	19—Finlay & Thompson	2,500 00	
August	19—Streubel & Co., for sprinkling disinfectants	408 50	
August	26—Finlay & Thompson	2,221 32	
September	6—Finlay & Thompson	2,406 50	
September	6—Balder, Adamson & Co	422 18	
September	6—I. L. Lyons & Co	1,214 45	
September	6—Finlay & Thompson	219 15	
September	6—Streubel & Co , distributing disinfectants	47 50	
September	28—Finlay & Thompson	139 36	
October	1—Balder, Adamson & Co	364 67	
October	1—Finlay & Thompson	1,250 55	
October	17—A. Vizard	103 50	
October	17—Page & Co	252 00	
November	8—A. Vizard	32 00	
1880.			
January	26—Finlay & Thompson	30 00	
December	22—Finlay & Thompson	269 73	
	Total amount expended in 1878		$12,207 22
			$55,020 49

RECAPITULATION.

Amount paid for the year 1870	$2,851 77
Amount paid for the year 1871	2,448 21
Amount paid for the year 1872	
Amount paid for the year 1873	16,069 83
Amount paid for the year 1874	2,482 35
Amount paid for the year 1875	12,376 35
Amount paid for the year 1876	3,543 58
Amount paid for the year 1877	3,041 18
Amount paid for the year 1878	12,207 22
Amount paid for the year 1879	
Amount paid for the year 1880	
	$55,020 49

N. B.—The amounts above stated are the actual amounts paid by the city of New Orleans, to January 29, 1881, but there are still amounts due to sundry parties for disinfectants furnished during several years, which are still unpaid.

On the other hand, during the years 1880, 1881, 1882 and 1883, not one farthing has been appropriated by the Legislature to the maintenance of her quarantine establishments, and the City Council has appropriated an amount in the annual budgets inadequate to the pay of the sanitary inspectors and sanitary police, leaving nothing whatever for the purchase of disinfectants.

The Board of health paid during the year 1880 the following sums, which should have been paid by the City Council: To I. L. Lyons, balance of account for disinfectants, $28 64; to G. R. Finlay & Co., for disinfectants furnished in 1880, $667 82; to salaries of sanitary inspectors, $1550; to G. R. Finlay & Co., for disinfectants supplied during this year, in addition to the amount stated above, $334 92. We have thus a total of $2930 38, paid by the Board of Health out of the revenues derived from the quarantine fees, the registration of births, deaths and marriages, privy permits and coal oil inspections, for material and services justly chargeable to the city.

When, in accordance with the organic acts of the Legislature of Louisiana, the President of the Board of Health assumed the direction of the quarantine establishments of Louisiana in April, 1880, he found them in a dilapidated and deplorable condition.

At the Mississippi Quarantine Station, the fever hospital, and more especially the small-pox hospital, which had been occupied as a residence by one of the officers, were in wretched condition. The quarantine boat house and wharf were undermined and unsafe; in fact, it was necessary to moor the physician's boat in the river, without protection from the rain, at the government wharf. The inside of the quarantine boat had been stove, and it was necessary to replace it with one capable of executing the hazardous labors of boarding in the treacherous waters of the Mississippi River.

The levees were broken and the drains of the hospital grounds were open, without fences, and were roamed over by cows, horses and hogs. The graveyard was a mass of tangled brushes, brambles, briars and sedge grass.

The plastering of the hospital walls was broken, the windows open, the roof leaking, and there was an absolute absence of all decent and comfortable beds and bedding. The supply of drugs and medicines and medical appliances was exhausted.

After carefully viewing the situation the first work accomplished by the executive of the Board, with the advice of Col. I. N. Marks, the able and patriotic chairman of the Finance Committee, and the assent of the Board, was the equipment of the hospital with beds, bedding, mosquito bars, blankets, sheets, crockery, cooking stoves and utensils, and a full supply of fresh, pure drugs. In 1880 the Board was without the necessary funds, and the season so far advanced that it was out of the question to attempt any repairs during the summer and fall. But as soon as funds had been accumulated by the most rigid economy, upon the urgent recommendation of the President, indorsed by the chairman of the Finance Committee, about $6000 was devoted to the repair of the Mississippi Quarantine Station.

Estimates were made by the State engineers, but the contract was awarded to private parties, who executed the work at the lowest possible figures, and the Mississippi Quarantine Station was placed in an effective condition and in complete repair, and was thoroughly equipped by the first of March, 1881; and but for the diversion of a portion of the funds to pay the sanitary inspectors and sanitary police in the autumn and winter of 1880, it would have been possible to have placed the Rigolets Station in comparative effective condition.

A detailed statement of the expenditures at the Mississippi Quarantine Station will be presented under the appropriate head.

Under the system of rigid economy exercised by the Finance Committee, acting in full accord with the President of the Board, the following important works have been accomplished during 1880-1881:

1. The publication of one thousand copies of the Acts of the Legislature of Louisiana establishing and regulating quarantine for the protection of the State; organizing and defining the powers of the Board of Health; and regulating the practice of medicine, midwifery, dentistry and pharmacy, rules and regulations of the Board of Health, and ordinances of the city of New Orleans. This volume of 100 pages, illuminated by valuable maps, illustrating the position of the quarantine establishments and the medical topography of New Orleans and lower Louisiana, was digested, consolidated and passed through the press by the President without any cost to the Board of Health, except in the mere matter of printing and paper.

2. The preparation, publication and distribution by the president to the shipping agents, shipping masters, and captains, and foreign consuls, and leading merchants in the port of New Orleans, 7500 copies of the rules and regulations of the Board of Health governing quarantine.

Upon assuming the duties of President of the Board of Health of the State of Louisiana, in April, 1880, the necessity for collecting and publishing all the laws of Louisiana, bearing on sanitary science and public hygiene, was at once realized, as the acts of the Legislature, the ordinances of the City Council and the rules and regulations of the Board of Health were scattered through various official documents, or existed only in manuscript in the archives of the City Hall and Board of Health. Measures were taken for the collection of the existing laws and ordinances, and the importance of their publication for the guidance of the officers and employes of the Board of Health, and the public, in the execution of sanitary measures and reforms, was urged upon the Board of Health.

Notwithstanding the pressure of official duties, the President deemed this work of such importance in its bearing upon the public welfare, that he embraced every opportunity and every moment of time for its successful completion.

The labor by the President in the collection and classification of the quarantine laws of the State, and ordinance of the Board of Health and City Council, was indorsed by the Board of Health, and their publication at the earliest practical moment granted.

On the fourteenth of October, 1880, the laws of the State of Louisiana regulating the establishment and enforcement of quarantine for the protection of the State, and defining the powers of said Board of Health; also, the health ordinances of the city of New Orleans, and the rules, regulations and forms of the Board of Health, were published and distributed to the State and civil officials, and to the prominent physicians and sanitarians of this and other Southern and Western States.

3. The publication and distribution of one thousand copies of the circular of the committee charged with the arrangement and programme of the quarantine convention; the prompt payment of all the expenses incurred in the conduct of the quarantine convention.

Whilst the quarantine convention, as a body, was deaf, dumb and blind to matters relating to quarantine and sanitary science, and to the welfare of Louisiana, nevertheless its discussions revealed the plan of action of the enemies of this board, which was vigorously executed during the winter of 1880 and 1881, and the spring of the latter year, by certain voluntary associations in this city and elsewhere.

4. The weekly publication and distribution to the chief health officials in this country and Europe of the mortuary and meteorological statistics of the Board of Health. All important reports of committees, and all matters relating to the health of this city and State, published in the daily press of New Orleans, have in like manner been promptly forwarded to the Boards of Health and Quarantine Stations in surrounding States.

By such measures, neighboring States, and especially those of the valley, were divested of all excuse for establishing quarantine against a healthy city.

5. The publication and distribution of 3000 copies of the annual report, in accordance with the formal resolution of the board. Said report was illustrated with maps, charts and lithographs, and distributed to the members of the State Legislature and of Congress, and to all known boards of health and health organizations. This work was published at the lowest possible cost, and the demand has been so great for it, not only in this but in other States, that the entire edition is now well nigh exhausted.

6. The prompt payment of the pay-roll of the Board of Health, which now amounts to $2400 per month.

No board of health has ever before attemped to carry out effective quarantine inspection at the mouth of the river, to maintain an inspection at Port Eads, or to maintain inspectors of shipping for the river front and the Old and New Basins. In this respect alone the Board of Health has a monthly expense of $250 above that of any former board. The system of harbor and basin inspection, as well as that of the hygienic conduct of ships, was proposed and perfected by the executive officer of this board.

At the present moment, the active force of the Board of Health consists of: The President, the Secretary and Treasurer, two clerks for the registration of deaths, births and marriages, clerk and book-keeper, messenger and collector, two coal oil inspectors, two police deputy inspectors of shipping in the Mississippi river and in the Old and New Basins, one porter; two quarantine officers at the Mississippi Stations, four boatman, one watchman, one nurse, one keeper of hospital grounds; at Port Eads—one quarantine inspector and two boatmen; at Rigolets—one quarantine physician, two boatmen and one watchman; at Atchafalaya; one quarantine physician and one boatman.

The officers and employees of the board of health proper, therefore, number about twenty-seven.

The preceding estimate does not, of course, embrace the Sanitary Inspectors and Sanitary Police, paid by the city out of the budget appropriation to the Board of Health. This sanitary corps consists of six inspectors and twelve policemen—total, 18.

The entire effective force of the board of health during the years 1880 and 1881, officers and men, was about 45.

Not only has the entire corps been promptly paid, but the four quarantine stations have been fully supplied with disinfectants, coal oil for lights, and all the necessary equipments for the boats and hospitals; and the Board of Health has purchased and distributed gratuitously to the poor of the city of New Orleans, during the years 1880 and 1881, about 150,000 pounds of copperas, 150 gallons of carbolic acid, 9000 pounds of sulphur.

Under the able management of the Chairman of the Finance Committee, acting in full accord with the executive officer of the Board of Health, every obligation has been promptly met by cash payments, and the present small amount of money in the treasury of the board is an evidence that its revenues have been faithfully and promptly applied in accordance with the laws for the protection of the people from foreign pestilence, and for the prevention and arrest of disease in our midst.

New Orleans, during the past two years, 1880 and 1881, has been free from yellow fever, and all contagious or pestilential diseases, and this result has been accomplished at an annual cost of about $50,000 (fifty thousand dollars). Of this amount, the city of New Orleans has annually contributed $10,000; and the remainder ($40,000) has been collected chiefly from quarantine fees and the small amounts paid for the registration of births, deaths and marriages, etc.

We have a board of health upon which the greatest responsibility rests, and which is charged with the execution of the most important offices with reference to the protection of the Mississippi Valley from the importation of foreign pestilence, and yet no man within the bounds of Louisiana feels the burdens; for so skillfully and wisely have these sanitary and quarantine laws been framed, that there is no direct taxation, with the exception of the small amount furnished by the city. The revenues derived from the quarantine fees are returned a thousand fold to the merchants and shippers, ship masters and seamen, in that foreign pestilence is excluded, the health and hygiene of ships im-

proved, and the sick seamen carefully and comfortably treated in commodious hospitals.

The citizens of New Orleans derive great benefits from the registration of births, deaths and marriages, in various ways; but we will direct attention to only the following results flowing from this portion of the labors of the Board of Health:

1. The preservation of accurate records of the names, ages, nativity, residences, attending physicians, and diseases of all fatal cases, furnishes the only date upon which a correct estimate may be based as to the rate of mortality and the nature of the prevailing diseases. The systematic consolidation and publication of these statistics at regular intervals has enabled the executive of the Board of Health to meet and overthrow the slanders constantly launched by the enemies of New Orleans against her reputation for health. Whilst the cost of such publications enters as a considerable item in the expenses of the board, the return thus far in the maintenance of friendly relations with the health authorities of surrounding States, and in the prevention of senseless and destructive inter-State quarantines, has been more than one million fold. In addition to the preceding considerations, it is well known that upon an accurate record of deaths numerous questions of life insurance and successions of property frequently hinge. A stranger dies in New Orleans; he leaves a widow and several children; he also leaves a policy in a life insurance company. The payment of the policy to the destitute widows and orphans depends absolutely upon the establishment of the proofs of death, including date, place and cause. The records of the Board of Health furnish the necessary particulars. Hundreds of thousands of dollars annually depend upon the truth and accuracy of these records. Again, it is of the utmost importance that the ballot-box should be kept sacred and free from fraud. The daily mortuary records of New Orleans furnish the data by which the list of voters is constantly purged of what might be called literally "Dead Heads" in contradistinction of the dead-heads and dead-beats of sailor boarding-houses, corner groceries, unoccupied vacant lots and the charity wards of the eleemosynary institutions.

2. It is impossible to over-estimate the value of accurate records of births and marriages upon the welfare of the citizens; the simple records of births or deaths may decide, upon one side or the other, the suit for valuable possessions, and either establish or destroy the claim to honorable and untainted birth.

3. Questions relating to age, sex, race, occupation and nativity can alone be studied of well-recorded and classified mortuary and vital statistics.

4. Upon the proper action of the Honorable Mayor and the City Administrators of New Orleans, in providing the necessary means for the payment of the Sanitary Inspectors, and in furnishing the necessary police, and the necessary disinfectants and the carts for their distribution, depends in a large measure the sanitary condition of the city of New Orleans. New Orleans has no system of sewers; the excrement from her 216,000 inhabitants, and from the masses of strangers that constantly crowd her streets, may be removed by her manual labor. It is horrible to contemplate the effect of hoarding up the vast accumulations of human filth in this damp, hot, semi-tropical climate. In the present condition of New Orleans the only method of dealing with this gigantic evil, which is a constant menace to the health and comfort to the people, is to clean the privies by mechanical means—by well-devised, odorless apparatus, and to keep them continually disinfected by cheap and reliable disinfectants accessible to all at lowest prices. As President of the Board of Health, after careful investigation, I have recommended copperas (sulphate of iron) and carbolic acid as the cheapest and most reliable disinfectants.

The constant and systematic removal of the human and animal excrements, as well as the maintenance of a good sanitary condition of all private premises, must be based upon systematic house-to-house inspection.

Thorough inspection and thorough attention to domestic sanitation requires intelligent, faithful and honest sanitary inspectors, and efficient and honest sanitary police, subjected to rigid discipline.

The organic acts of the Legislature make it imperative upon the honorable Mayor and Administrators of New Orleans to furnish an adequate police force to perform the sanitary offices indicated by the Board of Health as necessary to the preservation of the health of the people; and it is equally the duty of the municipal government to furnish the necessary funds for the payment of the sanitary inspectors and the supply of sufficient amounts of disinfectants. The continuous and efficient inspection of the shipping in the harbor of New Orleans should also be provided for by the City Council.

ESTIMATED RECEIPTS OF THE BOARD OF HEALTH, STATE OF LOUISIANA.

(Receipts for the Ten Months Ending October 31, 1881.)

To cash and uncollected drafts on hand January 1, 1881		$ 5,858 91
Mississippi Station—Amount fees from vessels via Station	$14,622 22	
Rigolets Station—Amount fees from vessels via Station	506 00	
Coal Oil Inspection—Amount fees gauging and inspection	2,230 14	
Recording Births—Amount fees	1,142 50	
Recording Deaths—Amount fees	2,654 50	

Recording Marriages—Amount fees	1,008 00	
Marriage License—Amount fees	1,065 50	
Record Certificates—Amount fees	91 00	
Privy Permits—Amount fees	2,039 50	
Body Permits—Amount fees	42 25	
Building Permits—Amount fees	49 25	
Interment Permits—Amount fees	51 00	
Amount received from city of New Orleans for disinfectants	500 00	
Amount divided from deposits in New Orleans Savings Institution	47 80—	26,039 66
Total		$31,898 57

(*Estimated Receipts for Two Months ending December* 31.)

To Mississippi Station—Amount of fees from vessels via station	$4,595 00	
Coal Oil Inspection—Amount fees for gauging, etc	661 20	
Recording Births, Deaths and Marriages—Amount fees	889 50	
Privy Permits—Amount fees	100 00	
Buliding, Body and Interment Permits—Amount fees	7 50—	6,253 20
		$38,151 77
To balance		98 71
Total		$38,250 48

DISBURSEMENT OF THE $10,000 APPROPRIATED BY THE CITY OF NEW ORLEANS FOR THE USE OF THE BOARD OF HEALTH, STATE OF LOUISIANA, FOR ITS EMPLOYMENT OF SANITARY INSPECTORS AND POLICE, DURING 1881.

January....Five Sanitary Inspectors, at $100	$500 00	
.. One Sanitary Inspector	75 00	
.. Six Sanitary Policemen, $50	300 00—	$ 875 00
February and March—Amount of rolls, at $875		1,750 00
April.....Six Sanitary Inspectors	575 00	
.. Thirteen Sanitary Policemen	425 00—	1,000 00
May .....Five Sanitary Inspectors, at $100	500 00	
.. One Sanitary Inspector	75 00	
.. Eleven Sanitary Policemen, at $100	500 50—	1,125 000
June .....Pay-roll same as May		1,125 00
July.....Pay-roll same as June		1,125 00
August ....Pay-roll same as June		1,125 00
September..Pay-roll same as June		1,125 00
October.....Five Sanitary Inspectors, salary reduced to $43 48	217 40	
" One Sanitary Inspector, salary reduced to $32 60	32 60—	250 00
November..Pay-roll same as October		250 00
December...Pay-roll same as October		250 00
Total		$10,000 00

The receipts of the Board of Health for the year 1882 will be from the same sources as at present, and will not vary materially from the estimate of 1881, apart from the appropriation by the City Council.

ESTIMATED EXPENDITURES OF THE BOARD OF HEALTH.

(*Expenditures for the Ten Months ending October* 31, 1881.)

By Mississippi Station—			
Paid resident physician	$4,166 61		
Paid assistant resident physician	1,166 60		
Paid boatmen's wages	3,052 00		
Paid for repairs to station	6,470 41—	$15,355 62	
By Rigolets Station—			
Paid salary resident physician	750 00		
Paid wages boatmen	720 00		
Paid sundries for station	52 43—	1,522 43	
By Atchafalaya Station			
Paid salary resident physician	450 00		
Paid wages boatmen	240 00—	690 00	
By Coal Oil Inspection—			
Paid Inspectors' salaries	2,000 00		
Paid for sundries	96 75—	2,096 75	
By Court Deposits—			
Amount deposited in court		12 00	
By General Expenses—			
Paid salaries officers and employees	8,803 19		
Paid sundries	2,790 22—	11,593 41	$31,300 21

(*Estimated Expenses for Two Months ending December* 31.)

By Mississippi Station—			
Paid salaries physician and boatmen		$1,786 64	
By Coal Oil Inspection—			
Paid salaries Inspectors	$400 00		
Paid sundries	20 00—	420 00	
By General Expenses—			
Paid salaries officers and employees		1,926 64	
Paid printing and lithographing annual report		1,530 00—	$5,663 28

LIABILITIES.

Balance due Woodward & Wight, supplies Mississippi Station	$190 96	
Balance due G. R. Finlay & Co., supplies to Board	935 78	
Balance due J. S. Rivers, stationery	144 85	
Balance due Danziger for draping office	15 40—	1,286 99
Total		$38,250 48

RECAPITULATION.

Expenditures for ten months	$31,300 21	
Estimated expenditures for two months	5,663 28	
Liabilities	1,286 99—	$38,250 48
Receipts for ten months	31,898 51	
Estimated receipts for two months	6,253 20—	38,151 77
Probable deficit		$98 71

STATEMENT OF SUMS NECESSARY FOR THE MAINTENANCE OF THE QUARANTINE AND SANITARY OPERATIONS OF THE BOARD OF HEALTH DURING 1882.

TO MISSISSIPPI QUARANTINE STATION.

Salary Resident Physician	$5,000 00	
Salary Assistant Resident Physician	2,000 00	
Wages of watchman	540 00	
Wages of coxswain	540 00	
Wages of four boatmen	1,920 00	
Druggist and hospital steward	900 00	
Two hospital nurses at $50 per month	1,200 00	
Hospital cook	720 00	
Medicines and hospital supplies	1,000 00	
Repairs of boats	200 00	
Disinfectants	1,500 00	
Food, bedding and supplies for sick	2,000 00	
Shipchandlers' supplies, oil for lamps, etc	500 00	
Expenses of telegrams	250 00	
Inspection expenses, towage of infected vessels	1,000 00	
Repairs of buildings	2,000 00	
Steam launch and crew	2,500 00	
		$23,770 00

TO RIGOLETS QUARANTINE STATION.

Salary Resident Physician	$900 00	
Wages of boatman	480 00	
Wages of watchman	300 00	
Purchase of grounds and erection of buildings for sick and discharge of cargo	3,000 00	
Disinfectants	300 00	
Supplies for sick, medicines, etc	500 00	
Repair of boats, shipchandlers' supplies	500 00	
		5,980 00

TO ATCHAFALAYA QUARANTINE STATION.

Salary Resident Physician	$450 00	
Wages of boatman	240 00	
Wages of watchman	240 00	
Purchase of grounds and erection of buildings	2,000 00	
Disinfectants	200 00	
Telegrams and inspection service	250 00	
		3,380 00

TO OFFICE AND GENERAL EXPENSES.

Salary of President	$2,400 00	
Salary of Secretary and Treasurer	2,000 00	
Salary Deputy Recorder Births, Deaths and Marriages	1,200 00	
Salary Assistant Recorder Births, Deaths and Marriages	1,000 00	
Salary Clerk Board of Health	1,000 00	
Salary Messenger and Collector	480 00	
Salary Porter	120 00	
Salary Quarantine Inspector, Port Eads	600 00	
Salary Coal-oil Inspectors	2,404 00	
Salary Attorney	600 00	
To printing annual report	1,200 00	
To lithographing same	400 00	
To telegrams, publication, transmission to health authorities of special reports	500 00	
To books (record of births, deaths, marriages) and stationery	500 09	
To publication, distribution of sanitary circulars, health laws, quarantine proclamations	500 00	
To rent of office of Coal oil Inspectors	100 00	
To bungs, corks and glue	130 00	
		15,300 00

ESTIMATE OF EXPENDITURES FOR THE CONDUCT OF THE SANITARY AFFAIRS OF THE CITY OF NEW ORLEANS FOR THE YEAR 1882, UNDER THE CONTROL OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA.

Six Sanitary Inspectors at $100 per month	$7,200 00	
One Sanitry Inspector	1,500 00	
Two Inspectors of Shipping in River and Basin	1,200 00	
		9,900 00

Disinfectants—		
20 pounds Copperas to each house (40,000), total Copperas 1,200,000 lbs at 1½c per lb.	1,800 00	
1,000 gallons Calvert's No. 5 carbolic acid at $1 20 per gallon	1,200 00	
25,000 pounds sulphur at 2¾c per pound	687 50	
500 barrels lime at $1 10 per barrel	550 00	
15 barrels chloride of lime at $12 per barrel	180 00	
5 barrels sulphate of zinc at $21 per barrel	105 00	
		4,522 50
Miscellaneous—		
Printing and distribution of circulars	500 00	
Office rent Sanitary Inspectors	500 00	
Vaccine matter for schools and colleges and citizens	500 00	
Disinfecting apparatus, pots, pans, etc., warehouses, shipping, dwellings, etc	500 00	
		2,000 00
Total		$16,422 50

In addition to the above the Honorable Mayor and Administrators of the city of New Orleans should furnish the Board of Health the following policemen and force for house-to-house inspection and disinfection:

First District, Sanitary Policemen	4
Second District, Sanitary Policemen	3
Third District, Sanitary Policemen	3
Fourth District, Sanitary Policemen	3
Fifth District, Sanitary Policemen	2
Sixth District, Sanitary Policemen	1
Seventh District, Sanitary Policemen	1
First District, Carts with Drivers and Teams for the distribution of disinfectants	2
Second District, Carts with Driver and Teams for the distribution of Disinfectants	1
Third District, Carts with Drivers and Teams for the distribution of Disinfectants	1
Fourth District, Carts with Drivers and Teams for the distribution of Disinfectants	1
Fifth District, Carts with Drivers and Teams for the distribution of Disinfectants	1
Sixth District, Carts with Drivers and Teams for the distribution of Disinfectants	1
Seventh District, Carts with Drivers and Teams for the distribution of Disinfectants	1

The cost to the city of an epidemic of yellow fever has been estimated at not less than $15,000,000 (fifteen millions of dollars). The estimate which, as President of the Board of Health, I have made for the conduct of the sanitary affairs of New Orleans, is not more than one-thousandth part of the cost of a single epidemic. In the conduct of the sanitary affairs of New Orleans the organic acts of our Legislature have made the City Council responsible for the prompt supply of the necessary funds for the payment of the Sanitary Inspectors, and for the purchase of the necessary disinfectants, and for the detail of the necessary police. The prompt fulfillment of these important duties by the Honorable Mayor and City Council will establish the fullest confidence in surrounding communities, and will promote the highest and best interests of the city and State in protecting foreign and internal commerce from unnecessary quarantine, and above all, in protecting the lives and promoting the health of the people.

OUTLINE OF THE QUARANTINE AND SANITARY OPERATIONS OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA FOR 1882.

MISSISSIPPI QUARANTINE STATION.

The total number of vessels inspected at the Mississippi Quarantine Station during the year 1882 were: Steamships, 615; ships, 53; barks, 160; brigs, 28; schooners, 142. Total, 998.

The total number of vessels held in quarantine was 117, distributed thus during the months: May, 16; June, 22; July, 8; August, 12; September, 28; October, 26; November, 5. The quarantined vessels came from the following ports, in the numbers specified: Rio Janeiro, 8; Havana, 49; Vera Cruz, 25; Minatitlan, 2; Celon, 11; Tampico, 2; Martinique, 5; St. Jago de Cuba, 3.

Some vessels arrived with sick on board at the Mississippi Quarantine Station on the following dates: May 8, June 21, September 3, September 29, October 4, October 15, November 16.

The total number of sick was twenty-one, with three deaths. The cases were referred to the various forms of malarial paroxysmal fever; no case of yellow fever occurred at the Mississippi Quarantine Station during 1882.

RIGOLETS QUARANTINE STATION.

Total number of vessels boarded and inspected at the Rigolets Quarantine Station, during 1882 was 933, the great majority of which were schooners.

The season of quarantine restriction at this station lasted from May 1 to November 1, and during this period no case of sickness of any nature was observed at the Rigolets Quarantine Station.

ATCHAFALAYA QUARANTINE STATION.

During the quarantine season, at the Atchafalaya Station, first of May to first of November, 1882, 129 steamships, 59 schooners and 6863 passengers were inspected. Ten ships hailed from infected ports.

QUARANTINE STATION AT ENGLISH LOOKOUT.

The Board of Health established and maintained a quarantine station, with one medical inspector and two sanitary policemen, at English Lookout, on the Mobile Railroad, from the latter part of August until the close of October, and all passengers and baggage were subjected to inspection.

QUARANTINE OBSERVATION AT PORT EADS, AT THE MOUTH OF THE MISSISSIPPI.

A quarantine officer was maintained at the mouth of the Mississippi River, from the first of May until the first of November, and vessels entering the mouth of the Mississippi River were subjected to inspection and observation.

HOUSE-TO-HOUSE INSPECTION AND NUMBER OF NUISANCES ABATED DURING 1882.

	No. of Inspections made.	No. of Re-inspections.	No. of Nuisances abated.
First District	15,981	10,091	8,639
Second District	7,995	3,646	3,172
Third District	12,160	4,822	3,086
Fourth District	9,869	2,839	2,814
Fifth District	3,690	578	650
Sixth District	4,374	1,156	813
Seventh District	2,971	566	.....
Total	57,040	23,698	19,174

In the First District, 3828 premises were disinfected, and a proportionate number in the other districts. Where contagious diseases were reported to the Board of Health, the premises were disinfected and fumigated.

MORTALITY OF NEW ORLEANS DURING 1882—MORTALITY IN THE DIFFERENT DISTRICTS IN NEW ORLEANS DURING 1882.

	Whites.	Colored.	Total.
First District	1,381	820	2,201
Second District	606	468	1,074
Third District	732	570	1,302
Fourth District	493	200	693
Fifth District	87	89	176
Sixth District	216	115	331
Seventh District	67	78	145
Total	3,582	2,340	5,922

DEATH-RATE PER 1000 INHABITANTS PER ANNUM IN THE VARIOUS DISTRICTS DURING 1882.

DISTRICT.	White.	Colored.	Total.
First	31.87	58.04	38·31
Second	19.31	35.18	24.04
Third	21.70	49.45	28.56
Fourth	16.09	28.94	18.46
Fifth	17.32	23.20	19.87
Sixth	18.07	28.20	20.65
Seventh	13.44	25.06	23.24

First District—Maximum death-rate: White, December, 44.87; lowest, September, 26.59. Colored—Maximum, April, 67.95; lowest, February, 43.32. Colored and white—Maximum, December, 49.29; minimum, July, 32.79.

Second District—White: Maximum, May and June, 24.48; minimum, March, 14.15. Colored—Maximum, May, 55.03; minimum, December, 27.96. White and colored—Maximum, May, 33.82; minimum, September, 20.14

Third District—Maximum death-rate: Whites, April, 27.39; minimum, November, 17.72. Colored—Maximum, May, 80.16; minimum, August, 30.19. Total white and colored—Maximum, April, 39.85; minimum, August, 21.58.

Fourth District—Maximum: White, December, 26.25; minimum, September, 9.79. Colored—Maximum, December, 41.67; minimum, March and September, 15.63. Total white and colored—Maximum, December, 29.09; minimum, September, 10.87.

Fifth District—Maximum, May, 33.45; minimum, June, 9.55. Colored—Maximum, 46.93; minimum, February and March, 12.51. Whites and colored—Maximum, July, 29.80; minimum, February and March, 12.19.

The death-rate rrom phthisis pulmonalis in the different districts (per 1000 inhabitants per annum) was as follows: First District, 5.01; Second District, 3.71; Third District, 3.01. The death-rate from malarial fevers: First District, 1.94; Second District, 1.36; Third District, 0.55.

MORTALITY BY MONTHS AND BY RACE.

MONTHS.	Deaths.		Total Deaths.
	W.	C.	
January	282	186	468
February	256	151	417
March	256	209	465
April	308	231	539
May	330	259	589
June	335	226	561
July	288	172	460
August	267	176	443
September	239	161	400
October	306	183	489
November	322	184	506
December	383	202	585
Total	3582	2340	5922

ESTIMATED POPULATION OF NEW ORLEANS.

Whites	163,606
Colored	59,949
Total	223,555

DEATH-RATE OF NEW ORLEANS, PER 1000 INHABITANTS, DURING 1882.

MONTHS.	Death Rate per 1000 per annum.		Death rate per 1000 per annum.
	W.	C.	W. & C.
January	20.68	37.23	25.12
February	19.51	30.22	22.38
March	18.77	41.83	24.96
April	22.59	46.23	28.31
May	24.20	51.84	31.61
June	24.57	45.23	30.11
July	21.12	34.42	24.69
August	19.58	35.23	23.77
September	17.53	32.22	21.47
October	22.44	36.63	26.24
November	23.61	36.80	27.16
December	28.09	40.43	31.40

Death-rate during first six months of 1882: whites, 21.72; colored, 42.10; total, 27.18.

Death-rate during last six months of 1882: whites, 22.06; colored, 35.96; total, 25.79.

Death-rate for the entire year 1882: whites, 21.89; colored, 39.03; total, 26.45.

Sex: Whites: males, 2104; females, 1478. Colored: males, 1225; females, 1115. Total males, 3329; total females, 2593.

Of the total number of deaths, 3605 were natives of Louisiana, and 977 of other States, and 1240 of foreign countries; Germany heads the list, with 441 deaths, then follows Ireland, with 420 deaths, and next France, with 187.

The deaths in public institutions numbered 1127; of which 805 occurred in the Charity Hospital. The deaths reported by the coroner numbered 1028. The deaths in public institutions, together with those reported by the coroner, amounted to 2155.

Of the total deaths occurring in New Orleans during 1882, only 3767 received medical attention in their homes and residences.

It is evident from the preceding statistics that the death-rate of the white inhabitants of New Orleans, if calculated upon a basis of actual inhabitants, exclusive of foreigners and strangers, and laborers from the levees of the Mississippi River and from the various lines of railroads, crowding the hospitals, prisons and asylums, would not exceed 15 per 1000 inhabitants per annum.

The white population of New Orleans manifested a lower death-rate (if the calculation be made upon the basis just indicated) than that of any other city of the same size and similarly situated in the civilized world.

Average daily mortality in New Orleans during the year 1882, 16.22.

Lowest daily mortality in first six months of 1882, January 19, when only six deaths occurred.

Highest daily mortality in first six months of 1882, April 29, when thirty-four deaths occurred.

Lowest daily mortality of last six months of 1882, on August 11 and October 1, when five deaths were recorded upon each of the days specified.

Highest mortality during the last six months of 1882, October 14, when thirty deaths occurred.

The highest daily mortality occurred on April 29, and the next highest on October 14.

The lowest daily mortality occurred on August 11, October 1, and January 19.

MORTALITY OF NEW ORLEANS DURING 1882, COMPARED WITH THE MORTALITY OF PRECEDING YEARS.

YEAR.	Death-rate per 1000 population per annum.		
	Whites.	Colored.	Total.
1845	25.10	22.50	24.32
1847	79.86	37.08	62.03
1849	81.92	62.91	77.44
1850	62.08	52.10	59.80
1852	67.91	43.04	62.90
1853	124.68	48.98	110.09
1856	32.98	35.66	33.89
1857	34.86	38.07	35.49
1858	69.64	80.37	72.70
1859	33.58	86.98	41.53
1860	41.99	52.79	43.51
1861	31.58	37.16	31.87
1863	37.30	59.53	41.35
1864	42.14	81.75	49.86
1865	33.32	60.88	38.99
1866	36.77	65.56	42.52
1867	56.79	47.80	54.69
1868	25.49	38.97	28.60
1869	27.29	44.80	31.73
1870	33.74	52.20	88.61
1871	27.26	42.76	31.32
1872	27.29	41.93	31.17
1873	32.79	51.42	37.73
1874	29.53	45.44	33.75
1875	26.28	40.25	30.00
1876	25.87	42.56	30.31
1877	25.96	49.02	32.11
1878	52.05	39.94	48.81
1879	20.85	32.41	23.91
1880	22.96	34.38	26.05
1881	25.79	38.95	29.31
1882	21.89	39.03	26.45

During the period of thirty-two years, embraced in the above table, with the exception of the year 1879, the death-rate among the whites was the lowest in 1882. The average death-rate for the thirty-two years among the whites, was about 39.6. Among the colored population the death-rate of 1882 was greater than that of 1845, 1847, 1856, 1857, 1861, 1868, 1879, 1880 and 1881; whilst it was less than the death-rates of 1849, 1850, 1852, 1853, 1858, 1859, 1860, 1863, 1864, 1865, 1866, 1867, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877 and 1878.

The average death-rate per annum during the thirty-two years specified amongst the colored population was about 47.1.

During the period of thirty-two years the death-rate of the total population was lower than that of 1882, during only three years; namely, 1845, 1879 and 1880.

During the four years, 1879, 1880, 1881 and 1882, the minimum death-rate amongst the whites was 20. 85, and the maximum 25.79; whilst the minimum death-rate amongst the colored race was 32.41, and the maximum 39,03; in the total population during the same period, minimum 23.78, maximum 29.31.

The mortality amongst the whites during the last four years has been less than ever before in the history of New Orleans; and the result must be mainly attributed to the following causes and conditions:

1. The absence of any marked or great prevalence of pestilential diseases.

The small number of deaths from yellow fever in 1879 exerted no appreciable influence upon the general death-rate.

2. The freedom of New Orleans from yellow fever during the past three years, 1880, 1881 and 1882, must be attributed to the execution of the quarantine laws, and to the sanitary measures enforced by the Board of Health—measures embracing the isolation and disinfection of the first cases of yellow fever.

The prevalence of yellow fever on the east at Pensacola, Florida, and on the west at Brownsville, Texas, during the autumn of 1882, would indicate that the absence of yellow fever in the epidemic form, was not due to any peculiar climatic conditions within and around New Orleans.

3. Systematic house-to-house inspection and domestic sanitation, carried forward under the direction of the Board of Health.

4. The prompt removal of the garbage and fœcal matters of the city, and the systematic discharge of the same into the Mississippi River, in accordance with the provisions of Acts 14 and 84, of 1877.

The attempt of the honorable City Council to improve the drainage of the city was limited chiefly to the First District, and was too circumscribed in its nature to admit of a definite calculation of its effects upon the public health.

Nevertheless, the work of deepening and cleansing the drainage canals of New Orleans should be continued under the direction of skillful engineers and faithful and honest city officials.

The subject of the drainage of New Orleans was fully discussed in the annual report of 1881, and it is evident that the facts and observations need not be repeated, as the arguments for the perfection of the drainage system of New Orleans are unanswerable.

YELLOW FEVER IN 1882.

The official mortuary records of the Board of Health of the State of Louisiana contain four certificates which assign the cause of death to yellow fever; one death was reported in June, one death in July, and two in August. The subjects were all of the white race.

The interests of science as well as the advancement of the material interests (commercial, manufacturing and sanitary) of New Orleans and of the State of Louisiana demand the record of the measures devised by the Board of Health for the arrest of yellow fever in 1882.

This record possesses an especial interest and value, in that yellow fever in 1882 invaded Brownsville, Texas, in the West, and Pensacola, Florida, in the East.

The Board of Health of the State of Louisiana devised and executed the measures for the arrest of yellow fever in New Orleans during the year 1882.

FIRST CASE OF YELLOW FEVER IN NEW ORLEANS IN 1882—HENRY FORBES.

SPECIAL MEETING OF THE BOARD OF HEALTH, HELD AT 1 O'CLOCK P. M., JUNE 27, 1882.

The President, Dr. Joseph Jones, stated that he had convened the board in special session, open to the representatives of the press and of the medical profession, and, in fact, to all respectable citizens, in order that the people here, and in all surrounding

States, should receive a full and accurate statement of all the facts with reference to the occurrence of the first case of yellow fever in 1882.

On the morning of June 26, the following communication was received from Dr. A. W. de Roaldes, Surgeon in charge of the Charity Hospital:

CHARITY HOSPITAL, STATE OF LOUISIANA,
New Orleans, June 26, 1882,

Dr. Joseph Jones, President Louisiana State Board of Health:

Dear Doctor—My attention was called this morning to a patient, coming from Havana, in ward 27 of the hospital. After a careful examination, I find the case a very suspicious one, to say the least.

I would earnestly request you to call at the hospital at your earliest convenience, when I shall take pleasure in seeing the case with you.

Your most obedient servant,
DR. A. W. DEROALDES, House Surgeon.

I repaired immediately to the Charity Hospital, and ascertained the following facts at the bedside of the patient, and from the hospital register.

Henry Forbes, aged 20, native of England; has resided about ten days in New Orleans; entered Charity Hospital (ward 27, bed 396) at nine o'clock a. m., Sunday, 25th, instant.

The patient gave the following history:

"Left Montevideo on Spanish brigantine Ritta, for Havana, via Costa Rica. On board this vessel was a passenger recovering from chills and fever, contracted in Rio de Janeiro. Length of passage from Montevideo to Havana, fifty-four days.

"Was in Havana five days, during which time he was on shore a day and a-half, but did not pass a night on shore. Came from Havana to New Orleans on steamship Marco Aurelio. Was eight days from Havana to New Orleans, including the detention at the Mississppi Quarantine.

"Arrived in New Orleans on Sunday, eighteenth instant, and was discharged on Tuesday, and went to boarding-house 98 Old Levee street, near corner of Enghien street, where he remained until Wednesday, twenty-first.

"*Wednesday morning*, went on board of steamship "Commander," of London, and was set to work painting the ship. On Thursday, twenty-second, at 8 a. m., was taken with a chill, followed by fever. Returned to boarding-house on Old Levee street, and remained there until Sunday morning, twenty-fifth instant, when he was sent to the Charity Hospital. At the time of admission to Charity Hospital appeared jaundiced and weak."

The following is the record, as detailed by the hospital student and entered upon the Hospital Register:

"9 a. m., Sunday, twenty-fifth instant: Appeared jaundiced and weak; had rather intense fever, nausea and vomiting, diarrhœa, tongue coated with whitish fur, headache, no backache; tenderness and pain on pressure over stomach, spleen and liver; tendency to epistaxis; small amount of blood vomited—may have been from epistaxis; general appearance of vomit was bilious. Ten grains each of calomel and soda given; also one ounce of liquor cinchonidiæ. Half at 11 a. m., remainder at 8 p. m.

June 26, 5:30 a. m.: Patient ejected a considerable amount of black vomit; temperature 100° F. in axilla; pulse frequent and weak; 12 m. tincture of digitalis given.

8:15 a. m.: Temperature in axilla 103.2°; pulse 108 and weak; patient rational, but deaf from effect of abscess of ear, which occurred some weeks ago.

Passed no urine since 9 o'clock last night; at 8 a. m., June 26, catheter was introduced and about four ounces of urine drawn, which contained an immense amount of albumen, and a considerable quantity of urates; tongue very red, with dry, brownish fur in center; gums congested; epistaxis, palpebral conjunctiva distinctly injected; sclerotic yellow; photophobia; patient burning, with a dry skin of a yellowish hue over trunk.

Great tenderness over region of epigastrum, over spleen and liver, but no enlargement of these organs; black vomit continues.

Temperature at 9:40 a. m. 102.5°, pulse 105.

The preceding notes were recorded by Mr. H. B. Williams, resident student, Charity Hospital.

Dr. C. Faget, Sanitary Inspector of the Second District, and visiting physician of the Charity Hospital, also furnished the following statement to the President of the Board of Health.

NEW ORLEANS, June 26, 1882.

Information received from patient Henry Forbes, sick in Charity Hospital, ward 27. Henry Forbes arrived from Havana on board steam-bark Marco-Aurelio on Sunday, June 18, now lying at Algiers. He was taken sick June 22, on board steamer Commander, which has now departed for Liverpool. Seen the day in Charity Hospital, ward 27, throwing up black vomit (coffee ground), red and yellow suffusion of eye and skin, pain in epigastric region, pulse rapid and weak, slight delirium (prognosis *unfavorable*).

Upon careful examination of Henry Forbes at 10:30 o'clock a. m., I found the patient with a temperature of 102.5°; full but soft pulse, 100 per minute; jaundice; capillary congestion of surface and conjunctiva; ejection of black vomit at short intervals; urine limpid contained albumen and casts. The urine and black vomit were examined imm

CHART

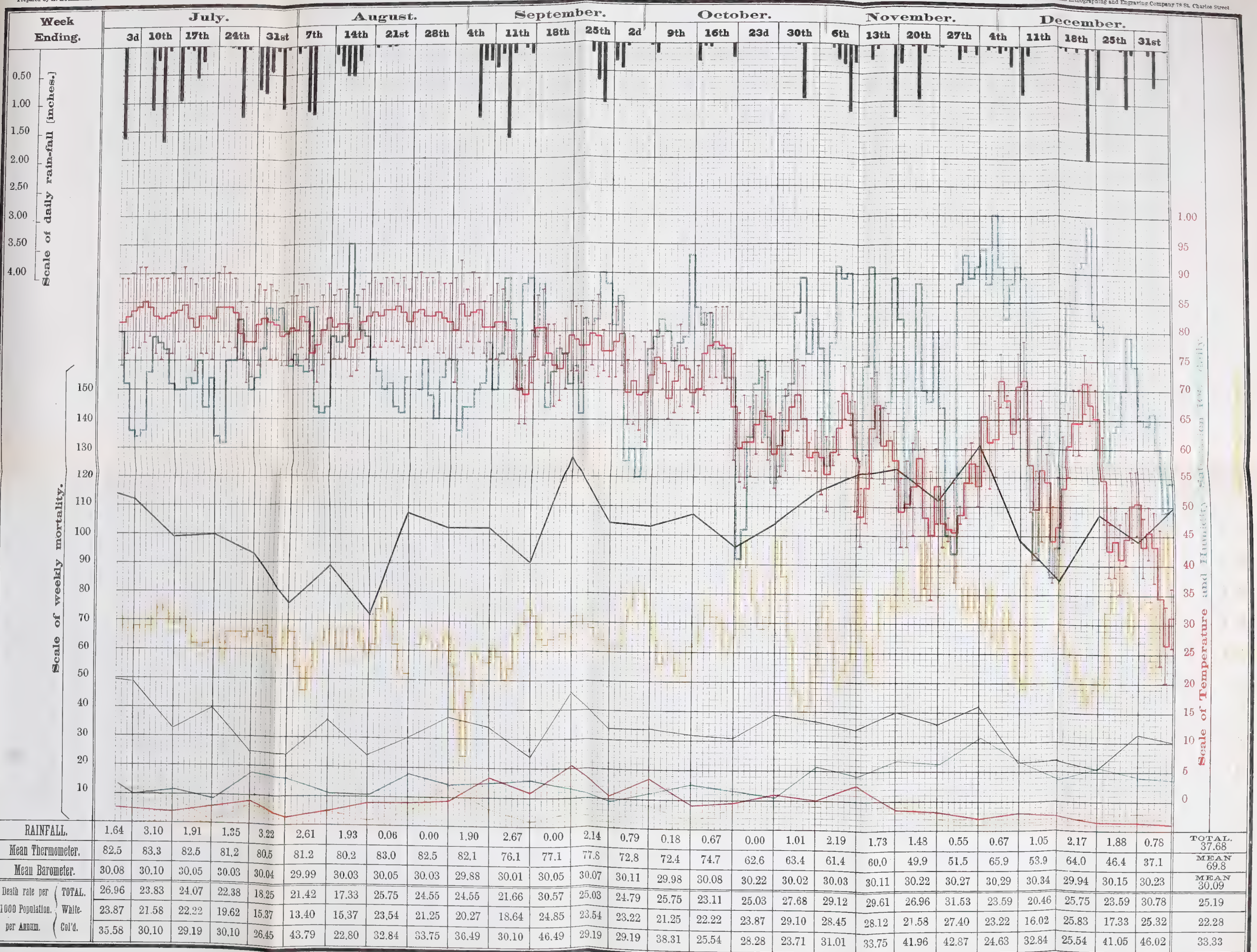
Illustrating the **COURSE** of the **TOTAL MORTALITY**, the **MORTALITY** of **CHILDREN** under five years of age,
and the **CHIEF FATAL DISEASES** in the **CITY** of **NEW ORLEANS**

DURING THE SIX MONTHS, ENDING DECEMBER 31st. 1880.

With Meteorological Observations during the same period

Prepared by H. KOHLHAASE.

New Orleans Lithographing and Engraving Company 78 St. Charles Street



RAINFALL.	1.64	3.10	1.91	1.35	3.22	2.61	1.93	0.06	0.00	1.90	2.67	0.00	2.14	0.79	0.18	0.67	0.00	1.01	2.19	1.73	1.48	0.55	0.67	1.05	2.17	1.88	0.78	TOTAL. 37.68
Mean Thermometer.	82.5	83.3	82.5	81.2	80.5	81.2	80.2	83.0	82.5	82.1	76.1	77.1	77.8	72.8	72.4	74.7	62.6	63.4	61.4	60.0	49.9	51.5	65.9	53.9	64.0	46.4	37.1	MEAN 69.8
Mean Barometer.	30.08	30.10	30.05	30.03	30.04	29.99	30.03	30.05	30.03	29.88	30.01	30.05	30.07	30.11	29.98	30.08	30.22	30.02	30.03	30.11	30.22	30.27	30.29	30.34	29.94	30.15	30.23	MEAN 30.09
Death rate per 1000 Population. per ANNUM. TOTAL.	26.96	23.83	24.07	22.38	18.25	21.42	17.33	25.75	24.55	24.55	21.66	30.57	25.03	24.79	25.75	23.11	25.03	27.68	29.12	29.61	26.96	31.53	23.59	20.46	25.75	23.59	30.78	25.19
White.	23.87	21.58	22.22	19.62	15.37	13.40	15.37	23.54	21.25	20.27	18.64	24.85	23.54	23.22	21.25	22.22	23.87	29.10	28.45	28.12	21.58	27.40	23.22	16.02	25.83	17.33	25.32	22.28
Col'd.	35.58	30.10	29.19	30.10	26.45	43.79	22.80	32.84	33.75	36.49	30.10	46.49	29.19	29.19	38.31	25.54	28.28	23.71	31.01	33.75	41.96	42.87	24.63	32.84	25.54	41.05	46.02	33.33

MORTUARY.

The heavy black line in centre of Chart represents the Total Mortality from all causes.
The unbroken black line near bottom of Chart represents Total Mortality of Children under 5 years.
The blue line near bottom of Chart represents Mortality by Phthisis Pulmonalis.
The unbroken ochre line near bottom of Chart represents Mortality by Diarrhœal Diseases.
The broken ochre line at bottom of Chart represents mortality by Yellow Fever.
The crimson line near bottom of Chart represents Mortality by all Malarial Fevers.

METEOROLOGICAL.

The vertical bars at top of Chart show daily rain fall (in inches.)
The perpendicular bars in center of Chart show daily range of Temperature.
The irregular crimson line in centre of Chart shows average Temperature (daily.)
The irregular blue line in centre of Chart shows relative Humidity (daily.)
The irregular ochre line in centre of Chart shows mean barometric pressure (daily.)

diately at my office. The black vomit contained masses of hæmatin, altered blood, corpuscles, cells of the mucous membranes of the stomach and mucous corpuscles. The casts of the tubuli uniferi in the urine were opaque and filled with granular matter.

In reply to a dispatch asking full particulars as to the sanitary condition of the steamship Marco-Aurelio, the Assistant Physician at Mississippi Quarantine Station replied as follows:

MISSISSIPPI QUARANTINE STATION,
JUNE 26, 1882.

To Dr. Herrick:

The new iron steamship Marco-Aurelio was in fine sanitary condition. Three days from Havana and three days here, total six. All well when she left here, June 17; thoroughly fumigated and disinfected here. She is a cattle boat, and thoroughly ventilated,
C. P. WILKINSON.

I next visited the locality from whence the seaman, John Forbes, had been removed to the Charity Hospital.

Mrs. Viana, residing at No. 98 Old Levee street, stated that Henry Forbes came to her house on Monday, the nineteenth. On Wednesday, the twenty-first, he took his clothing and went on board the "Commander," and commenced painting the ship. Slept aboard the "Commander" Wednesday night.

Was seized with a chill Thursday morning, and returned to her house. The man appeared to be in good health on Monday and Tuesday.

When he returned on Thursday his eyes were bloodshot, and he complained of a severe headache. On Friday had fever; was very restless, and drank much water, and vomited at intervals. Finding the man ill, and having no means with which to employ a physician, he was sent to the Charity Hospital on Sunday morning.

Mrs. Viana is forty-eight years of age, native of Germany; has resided in New Orleans thirty-six years; has one child, thirteen years of age. Her premises are clean. She stated that the room in which Henry Forbes had lain sick had been thoroughly cleansed and left open, and I found the door and window open and the floor clean.

The adjoining premises, corner Old Levee and Enghien streets, are occupied by Madam De Bly, who has lived in New Orleans twenty-eight years, and has had yellow fever; daughter twenty-one years of age, native of New Orleans; has two children, one of them an infant at the breast. The front portion of her house is occupied by Mrs. Mary Jalet, age thirty, who keeps a grocery. This woman was suffering with neuralgia of the right side of the face, to which she has been subject.

In the other portion of the back premises resided a man and his wife and three healthy children. In a small room in the rear of that occupied by Henry Forbes resided an old man.

It is evident, therefore, that fifteen souls occupied the front, rear and side premises, which surrounded a small yard or court. Inspection of the houses in the immediate vicinity failed to reveal any cases of sickness.

The following instructions were issued to Dr. Mioton, in person, by the President of the Board of Health.

Dr. E. J. Mioton, Sanitary Inspector, Third District:

Sir—You will proceed immediately to inspect, disinfect and fumigate the house No. 98, corner of Old Levee and Enghien streets, occupied by Mrs. Viana, from where Henry Forbes, seaman from steamer Marco Aurelio, was removed to the Charity Hospital on the twenty-sixth. Thoroughly fumigate the rooms and all clothing with sulphurous acid gas, and disinfect the privies and drains with copperas and carbolic acid. All unpainted wood-work should be whitewashed.

Proceed in this manner until the entire block and the block on the other side of Enghien street, have been thoroughly cleansed and disinfected; then continue in same manner for the blocks in the rear and on either side of the row mentioned.

Hold the entire neighborhood under close surveillance.

Detail Officer Evans for this special duty.

Your sanitary office has been amply supplied with disinfectants, by the Board of Health, for all present emergencies.

The Auxiliary Sanitary Association will furnish two carts and four men for the distribution of the disinfectants of the Board of Health, as you will observe from the enclosed communication of the Sanitary Director.

Have a careful sanitary inspection made of the immediate vicinity, and report the results to the Board of Health.

I shall continue to inspect the locality in person. The Board of Health demands that your action should be prompt and vigorous.

Detail Officer Nowell to the disinfection and fumigation of the steamship "Marco Aurelio," now lying directly across from the United States Mint, near the Third District ferry-landing. Furnish her with all necessary disinfectants and apparatus.

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

STEAMSHIP MARCO AURELIO.

I visited the steamship Marco Aurelio, lying about two blocks above the Third District ferry-landing; thoroughly inspected the ship, and mustered and examined her officers and crew.

The steamship Marco Aurelio was built at Greenock, Scotland, for the cattle trade. Her first trip was on August 21, 1881, to Kingston Jamaica; and since that time she has been running between Havana (Cuba), and Truxillo (Spanish Honduras), engaged in the cattle trade.

Laid at Truxillo at anchor from May 16 to June 6; reached Havana on the ninth of June; laid at anchor half a mile from shore, about abreast of Casa Blanca. The only time that she communicated with the shore was when her cargo of cattle was landed, then moved out in harbor half a mile from shore. Took in some coal from a barge alongside of her.

Took no cargo, no ballast at Havana; in fact, her ballast is simply water ballast.

Remained two days at the port of Havana.

Had twenty-eight men when she arrived; twelve men left, and four new men were shipped, including Henry Forbes. These men came on board on the tenth and eleventh of June. Henry Forbes, who came on board on the tenth, was used as an assistant to the cook. The names of the men shipped at Havana were, Thomas Martin, Lars Pedersen and Peter Pedersen. These men were discharged after their arrival in New Orleans, and are now in the city.

CONDITION OF CREW.

Careful inspection of each of the crew, the mate, engineer. the firemen and sailors, revealed them in perfect health. Appended is a detailed list.

The following detailed statement was drawn up on the deck of the steam vessel; the facts being elicited by direct inquiries and personal examination of the officers and crew:

Steamship "Marco Aurelio" (English), Thos. Morgan, Captain, was built at Greenock in 1880, and has been in the cattle trade between Truxillo (Spanish Honduras) and Havana since that time.

From May 16 to June 6, 1882, she was lying at Truxillo, when she left for Havana with a cargo of cattle, arriving there June 9. On June 11, after discharging cargo, she left Havana in ballast, and arrived at the Mississippi Quarantine Station at 11 o'clock p. m., June 14. Here she was detained three days (the time prescribed by the proclamation of the Governor), leaving the station at 9:39 p. m., June 17, and arrived at Algiers at 9:30 a. m., June 18.

From Truxillo to Havana she carried altogether twenty-eight men; twelve of these left there and four new hands were engaged, leaving her only twenty men, with which number she arrived at New Orleans. Since her arrival here three of these men have already left the port on other vessels, eight are still working in the ship, and four (among which is the man "Forbes") are on shore. Three of these board at a house on St. Peter, between Chartres and Royal streets, kept by Mr. John Ward. The following gives their names and history:

Lars Pedersen, age thirty-two years and six months, native of Norway, has sailed in hot climates for the past twelve years; has had what he considers yellow fever on the coast of Africa; was ashore in Havana on and off for about eight or nine days.

Peter Pedersen, age thirty-five years, native of Denmark, has sailed between the Western Coast of South America and Australia. Came last from Montevideo to Havana, where he boarded for eight or nine days in a house near the Gasworks; has never had yellow fever.

Thomas Martin, age thirty-four years, native of Liverpool, has been sailing between New Orleans and Liverpool for the last eighteen years; has never had yellow fever.

The following is a list of the men remaining on board ship:

Thos. Morgan, captain; Wm. A. Gaw, first mate; Jno. Ballawitch, second mate; A. L. Shaw, chief engineer; Theod. Clark, steward; Stephen Valero, watchman; A. Lazarowich, seaman; B. Judewich, seaman; J. Beriat, seaman; Manuel Peralto, fireman; Benito Dusse, fireman; Seraphina Espanio, fireman; Douglas Thompson, carpenter.

All of these men are thoroughly acclimated, except perhaps the three seamen (Austrians), and these have had what they call "Tampico" fever.

Henry Forbes, the man now sick at the Charity Hospital, is a young man about twenty years of age, and a native of England. Two months ago he shipped as seaman on the Spanish brigantine "Rita," bound from Montevideo to Havana, stopping on her way at Porto Rico. At Havana Forbes left the "Rita" and boarded ashore near the Gasworks for eight or nine days, when he shipped on the steamship Marco Aurelio. After arriving at New Orleans and being paid off, he went to board at No. 98 Peters street, Third District, June 19. Made arrangements to work his passage to Liverpool on the steamer Commander, and was engaged on this ship, painting, until Thursday, June 22, when h

came to his boarding house sick with fever and a severe headache. Not having much money, no physician was called in to attend to the man, but, growing worse, he was sent to the Charity Hospital on Sunday, June 25.

CONDITION OF VESSEL.

The vessel is one of the cleanest that I have ever inspected. The forecastle has been thoroughly painted, and she is being refitted and painted throughout.

I placed Officer Nowell in charge of the vessel, and directed him to thoroughly fumigate and disinfect all parts.

The three men were next visited on St. Peter near Chartres street, and carefully examined with the following result:

Lars Pedersen, native of Norway, has been sailing in tropical seas for many years, and has had yellow fever on the coast of Africa.

Peter Pedersen, native of Denmark, has been in New Orleans and the West Indies for the last fourteen years, but has not had yellow fever.

Thomas Martin, Englishman, has been in New Orleans on and off during the last twenty years.

The following communication has been addressed to Dr. C. Faget, Sanitary Inspector, Second District:

C. Faget, M. D., Sanitary Inspector, Second District:

Sir—Hold the men, Lars Pedersen, Peter Pedersen and Thomas Martin, now in a boarding house on St. Peter, between Chartres and Royal streets, under close observation.

Fumigate and disinfect their clothing and the premises which they occupy.

Inspect and disinfect the entire block upon which they are now located.

Act immediately and promptly.

The Board of Health has furnished your district with ample supplies of disinfectants.

Respectfully,

(Signed) JOSEPH JONES, M. D.,
President Board of Health.

After the President had stated these facts he directed the attention of the Board of Health to the fact that both the house in which Forbes had died and the Marco Aurelio had been taken possession of by the officer of the Board of Health, Dr. Eugene Mioton, Sanitary Inspector of the Third District, who had thoroughly fumigated the house and premises No. 98 Old Levee street, disinfected the rooms, yard, drains and privy, and burnt up the clothing, bed and bedding of Forbes.

The Marco Aurelio was under his direction also thoroughly disinfected and fumigated.

The work of disinfecting every yard and house in the square in which Forbes lay sick, as well as those in surrounding squares, was progressing under the direction of the Sanitary Inspector of the Third District.

Upon the conclusion of the report of President Jones, Hon. Edward Booth offered a resolution that the Board approve the action taken by the President, and that they rely confidently upon the experience and skill of the medical staff of the Board to give the official force to the necessary repressive and preventive measures which a first case will naturally suggest and justify.

This was unanimously adopted, and the following dispatch was read:

BATON ROUGE, June 27, 1882.

Prrsident Board of Health:

Assemble the Board of Health and recommend the extension of quarantine to not less than twenty days.

S. D. McENERY.

The President stated that he had telegraphed His Excellency, Governor S. D. McEnery, all the essential facts of the case of Forbes, and the preceding telegram was in response to his telegram.

The Governor's telegram coming up for action, Dr. Pratt said he was in favor of increasing the detention at quarantine of vessels arriving from infected ports, from ten to twenty days, as the Governor recommended, believing the same to be a wise precaution, and necessary under the circumstances.

Dr. Formento said that, with all due respect to the Governor, he would ask the Board to forget the source of the telegram, and act upon the question to the best of their judgment as a body of intelligent sanitarians. In his opinion, time was of less consequence in preventing the appearance of yellow fever than the mode of treatment at Quarantine.

Dr. Kells was in favor of an amendment that the Quarantine physician be instructed to exercise more vigilance.

Dr. Pratt said the period of incubation of yellow fever was unknown. In Forbes' case, he was taken sick twelve days after he went on board the Marco Aurelio.

Dr. Formento desired to be informed of the meaning of the words "an infected ship."

Dr. Kells moved that further consideration of the question to extend the quarantine to twenty days be postponed until the regular meeting to-morrow evening.

Mr. Bosworth favored immediate action. The public mind was agitated over this one case of yellow fever, and he thought it but right that the Board should allay this excitement by increasing the time, as the Governor recommended.

The yeas and nays being called on postponement, Drs. Formento, Von Gohren and Kells, and Messrs. Marks and Booth voted in the affirmative, and Dr. Pratt and Mr. Bosworth in the negative.

Hon. Edw. Booth, after citing the case of the Excelsior, offered the following resolution:

Resolved, That the President of the Board take immediate steps to return the steamship Marco Aurelio to Quarantine, there to await the further orders of the Board.

Dr. Jones considered it unnecessary to send the vessel back to quarantine, as she had been thoroughly disinfected, under his orders to Dr. Mioton, and is isolated.

Dr. Formento said he should oppose the passage of the resolution for these reasons, and also if there was any danger the mischief was done already, as she had been at Algiers nine days and had been visited by various persons who cannot now be found.

Mr. Booth believed in the Board doing what it could, if it could not do what it would.

Dr. Jones said the cases of the Excelsior and Marco Aurelio were different. On the former the men sickened on board, and she had a cargo, while no sickness has occurred on the latter, the Marco Aurelio having no cargo on board and coming in with water ballast.

Dr. Formento said he did not consider the Marco Aurelio an infected vessel.

Dr. Pratt considered it possible that she might be so.

Mr. Booth believed in the Board taking action as if she was, and sending her back to quarantine.

Dr. Formento said the man evidently contracted the fever at Havana, and not on board the vessel.

Dr. Pratt said, under the circumstances, it must not be presumed that the Marco Aurelio was free from infection simply because there was no sickness on board.

Mr. Booth said that the ship that brings a case of yellow fever from an infected port must be held responsible as a sanitary criminal, and must be treated accordingly.

Dr. Formento said he was unable to see any criminality, sanitary or otherwise, in the case of the Marco Aurelio, she having broken no quarantine rule or regulation.

Mr. Marks referred to the vessel which sent a cargo of sugar in lighters to Brooklyn, and one of the crew being taken sick with yellow fever in that city, and the vessel and man were sent back to quarantine.

The yeas and nays being called for on the passage of the resolution, Drs. Pratt and Kells and Messrs. Marks and Booth voted in the affirmative, and Drs. Formento, Von Gohren and Mr. Bosworth in the negative.

Dr. Jones asked for the views of the board in relation to returning the unacclimated members of the crew to quarantine with the vessel.

Dr. Pratt was in favor of sending the men back with the vessel.

Mr. Booth suggested that they be kept under surveillance by the sanitary inspectors.

The Board of Health then adjourned.

Immediately after the adjournment of the Board of Health, the following orders were issued:

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, June 27, 1882.

Captain Thomas Morgan, Master Steamship Marco Aurelio, New Orleans, La.:

Sir—Your attention is directed to the following resolution of the Board of Health of the State of Louisiana:

[Extract from Minutes of Board of Health, special meeting held June 27, 1882].

"By Mr. Booth—

"*Resolved*, That the President of the Board take immediate steps to return the steamship Marco Aurelio to quarantine, there to await the further orders of the board."

This resolution was offered in consequence of the death by yellow fever this morning in the Charity Hospital of New Orleans, of Henry Forbes, who was shipped on board the Marco Aurelio at Havana, and brought by said vessel to this port on the eighteenth of June.

You will also cause the return of all seamen and officers who were present on board the Marco Aurelio at the time of her leaving Havana, on the eleventh of June, 1882, including Lars Pedersen, Peter Pedersen and Thomas Martin, now residing at No. 40 St. Peter street, at a house now kept by Mr. John Ward, to the Mississippi Quarantine Station.

Therefore, in behalf of the public safety, and in obedience to the acts of the General Assembly, establishing and regulating quarantine for the protection of the State against the importation of fever and pestilence, you are hereby commanded to return your vessel, the Marco Aurelio, to the Mississippi Quarantine Station or to any point without the waters of Louisiana.

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, June 27, 1882.

To the Civil Sheriff of the parish of Orleans, Greeting:

Whereas, due and sufficient proof has been adduced before the Board of Health of the State of Louisiana, that the steamship Marco Aurelio did, on or about the eighteenth day of June, 1882, bring a seaman named Henry Forbes to the port of New Orleans, and that the said Henry Forbes sickened with yellow fever June 22, and died on June 27 of yellow fever, in the Charity Hospital of New Orleans: At the special meeting of the Board of Health, held this day, June 27, 1882, it was

Resolved, That the President of the Board take immediate steps to return the steamship Marco Aurelio to quarantine, there to await the further orders of this board.

Now, therefore, this is to command you to remove, forthwith, said steamship, with her officers and crew, including Lars Pedersen, Peter Pedersen and Thomas Martin, now boarding at No. 40 St. Peter street, at the house kept by Mr. John Ward, to the Mississippi Quarantine Station, subject to the further orders of the Board of Health, in accordance with the laws of the State of Louisiana, instituted for the protection of the State against the introduction of foreign pestilence.

Given under my hand and the official seal of the Board of Health of the State of Louisiana, in the city of New Orleans, this twenty-seventh day of June, 1882.

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

CORRESPONDENCE OF BRITISH CONSUL.

BRITISH CONSULATE,
NEW ORLEANS, June 28, 1882.

Dr. Joseph Jones, President Board of Health, New Orleans, La.:

Sir—The captain of the steamship "Marco Aurelio" has laid before me your letter to him, dated yesterday, in which he is commanded to return his ship to the Quarantine Station, "in obedience to the acts of the Senate and House of Representatives, regulating quarantine for the protection of the State."

I respectfully beg to be referred to the section under which this command is made.

I have the honor to be, sir, your obedient servant,

(Signed) A. DE G. DE FONBLANQUE.

BRITISH CONSULATE,
NEW ORLEANS, June 28, 1882.

Sir—The master of the British steamship "Marco Aurelio" has laid before me your letter to him of the twenty-seventh instant, in which you required him to cause the return of all seamen and officers who were present on board of her on the eleventh of June, 1882, including Lars Pederson. I have the honor to inform you that the entire crew of this steamship were paid off and discharged before me on the twentieth instant, and that consequently the master has no authority over them.

With regard to returning the ship to Quarantine Station. I await your reply to the question put in my first letter of this day, Begging you will have the goodness to refer me to the Revised Statute of the State for any legislation prior to March 14, 1870,

I have the honor to be, sir, your obedient servant,
A. DE G. DE FONBLANQUE.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, June 28, 1882.

Hon. A. de G. de Fonblanque, Consul of Great Britain:

Sir—I have the honor to acknowledge your communication of this instant, and in accordance with the request of the British Consul, enclose extracts from the Organic Acts of the Legislature of Louisiana, relating to the case of the steamship. Respectfully your obedient servant,

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

Extracts from the Acts of the General Assembly establishing quarantine for the protection of the State.]

Section 6 of "An act to establish a quarantine," etc., approved March 15, 1855, reads as follows:

* * * * * The Board of Health shall have power to issue warrants to any constable, police officer or sheriff in the State, to apprehend and remove such persons as cannot be otherwise subjected to the provisions of this act, or who shall have violated the same, and whenever it shall be necessary so to do, to issue their warrants to the sheriff of the city or parish where any vessel may be, having violated the provisions of this act, commanding him to remove said vessel to the quarantine grounds, and arrest the officers thereof, all which warrants shall be executed by the officer to whom the same shall be directed, who shall possess the like powers in the execution thereof, and be entitled to the same compensation as if the same had been duly issued out of any court in the State. * * * * *

Revised Statutes of Louisiana for 1870:

SEC. 3039. * * * * The Board of Health shall have power to issue their warrants to the sheriff of New Orleans or of any parish where any vessel may be to have such vessel, if they deem it necessary for the protection of health, removed to the Quarantine Station. * * * The Board of Health shall have power to extend the quarantine, should it be deemed necessary by them.

Section 6 of an Act approved March 16, 1870, reads:

The Board of Health shall have power to issue their warrant to any constable, police officer or sheriff in the State, to apprehend and remove such person or persons, as cannot otherwise be subjected to the provisions of this act, or who shall have violated the same, and whenever it shall be necessary so to do, to issue their warrants to the sheriff of the city or parish where any vessel may be having violated the provisions of this act, commanding him to remove said vessel to the quarantine ground, and arrest the officer thereof, all which warrant shall be executed by the officer to whom the same shall be directed, who shall possess like power in the execution thereof, and be entitled to the same compensation as if the same had been duly issued out of any court in the State.

BRITISH CONSULATE,
NEW ORLEANS, June 29, 1882.

Joseph Jones, M. D., President Board of Health, New Orleans, La.:

Sir—I have the honor to acknowledge the receipt of your letter of the twenty-eighth instant and its inclosure.

Section 3039 of the Revised Statutes appears to be conclusive as regards the ship.

I have the honor to be, sir, your obedient servant,

A. DE G. DE FONBLANQUE.

EXECUTIVE DEPARTMENT, STATE OF LOUISIANA,
RATON ROUGE, June 17, 1882.

Dr. Joseph Jones, President Louisiana Board of Health:

Dear Sir—In view of existing danger, I respectfully recommend that the period of detention at Quarantine be extended not less than twenty days, and that the full powers of the Board of Health be employed in securing the safety of this and and neighboring States. Very truly, yours,

S. D. MCENERY, Governor.

LETTER OF PRESIDENT OF BOARD OF HEALTH TO GOVERNOR McENERY, INCLOSING ORDER RELATING TO THE RETURN OF THE "MARCO AURELIO" TO MISSISSIPPI QUARANTINE STATION.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, June 29, 1882.

His Excellency, S. D. McEnery, Governor State of Louisiana, Baton Rouge, La.:

Dear Sir—I have the honor to inclose for the information of your Excellency, the essential facts relating to the case of yellow fever which terminated fatally, in the Charity Hospital, on the twenty-seventh instant; also, the orders issued to the captain and Civil Sheriff for the removal of said vessel to the Mississippi Quarantine Station.

This case furnishes a striking illustration of the neccessity of legislative action, fixing a definite period of quarantine detention of not less than ten (10) days, as in the original act of 1855.

This subject was urged by the President upon the General Assembly of Louisiana, in the annual report of the Board of Health for 1881 (see introduction and pp. 109, 120, 292), but up to the present moment, no action has been taken by the General Assembly with reference to this most important matter.

Every precaution has been taken, and the necessary sanitary measures will be continued, and upon a calm review of the situation, I hope for a complete suppression of all ill effects from this imported case.

With great respect and high esteem, I have the honor to remain,

Your obedient servant,

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

MISSISSIPPI RIVER QUARANTINE,
June 26, 1882.

Dr, S. S. Herrick, Secretary Board of Health, New Orleans:

Dear Sir—Enclosed please find roll for week ending June 24, 1882, and checks 433-438 inclusive of each. The new iron steamship Marco Aurelio has been engaged during the past winter in carrying cattle from Truxillo to Havana. She arrived at this station on June 14, at 10 o'clock p. m., with all well on board, and having had no sickness on board at all. Was fumigated and disinfected on the fifteenth. Every one being well on board, on June 17, at 10 o'clock p. m., she was released from here. The vessel is now lying at Algiers, and can be inspected there.

Your obedient servant,

C. P. WILKINSON,
Assistant Resident Physician.

QUARANTINE STATION, June 29, 1882.

Dr. Joseph Jones, President Board of Health:

The Marco Aurelio, with a crew of twelve, and four deputy sheriffs on board, arrived last evening. Have detained sheriffs. All well.

C. P. WILKINSON, M. D.

MISSISSIPPI RIVER QUARANTINE,
June 29, 1882.

Dr. Joseph Jones, President Board of Health, New Orleans:

Sir—About 7 o'clock p. m. yesterday, the steamship Marco Aurelio arrived here, having on board a crew of twelve men and four deputy sheriffs. The vessel was seized and sent away from New Orleans without giving any opportunity to the officers or crew to secure any provisions or bedding or mosquito bars. The sheriffs having come down on board of the steamer, and none of them having had yellow fever, I have detained them on board and subjected them to the same quarantine as the crew of the vessel.

About the same time of the arrival of the steamship the Norwegian bark Hans Nilsen Hauge arrived at the station with a cargo of sugar from Havana and Cardenas. She lay thirty days in Havana. I respectfully suggest that discharge of cargo for purposes of better purification be ordered for this and similar vessels from Havana.

Your obedient servant,

C. P. WILKINSON,
Assistant Resident Physician.

NEW ORLEANS, July 7, 1882.

To J. F Finney, M. D.:

If satisfied that the Marco Aurelio is no longer a source of danger, and if officers and crew are in good health, release her.

JOSEPH JONES, M. D.,
President Board of Health.

The preceding telegram was forwarded in accordance with the formal resolution of the Board of Health. In accordance with the petition of Thomas Martin, P. Pedersen and L. Pedersen, the Board of Health appropriated an amount satisfactory to these men, sufficiont to reimburse them for their extra expense while upon the Marco Aurelio. Mrs. Viana was also reimbursed for articles destroyed by burning.

CASE OF LOUIS DESCHLER, OF NO. 1010 TCHOUPITOULAS STREET, DIED IN CHARITY HOSPITAL OF NEW ORLEANS, JULY 17, 1882.

CHARITY HOSPITAL, July 17, 1882.

Dr. Joseph Jones, President State Board of Health:

Dear Sir—A case of yellow fever died in ward 24 this evening at 1 o'clock. We will give you the history of the case. The body lies exposed for your examination.

Very respectfully,

A. B. MILES, M. D.

CLINICAL REPORT OF THE CASE OF LOUIS DESCHLER, AS FURNISHED TO THE BOARD OF HEALTH OF THE STATE OF LOUISIANA, BY DR. A. B. MILES, SURGEON IN CHARGE OF THE CHARITY HOSPITAL OF NEW ORLEANS.

Louis Deschler, aged 31 years, native of Germany, resident in New Orleans twelve years, entered the hospital, ward 24, at 9 a. m. Sunday, the sixteenth of July.

Patient's account of his early illness are conflicting. At one time he stated that he had been sick one week, with accessions of fever every second day; later he informed the student of the ward that he had fever every day. The temperature was not registered upon admission, but to the touch, seemed normal.

Condition at 7 p. m., July 16, noted by Dr. Jamison: Patient jaundiced; tongue pointed, with red edges; gums congested; epigastric tenderness; urinary bladder empty. Patient stated that no urine had passed since Friday, the fourteenth of July. Mind unsteady, patient responding incoherently. Temperature, 104° F.; Pulse, 120.

Monday, 17, 9 a. m.: Jaundice increasing; epigastrum more painful upon pressure. Patient passed urine during the night (two ounces), which, upon examination, contained albumen (thirty-three per cent), hyaline casts and large quantity of bile. When left alone, patient wandering and restless; when aroused answering correctly; Temperature, 105° F.; pulse, 120.

During the forenoon on Monday, the symptoms increased in severity. The temperature ranged between 105° and 106° F. Pulse rapid, excited by convulsive muscular movements; marked tenderness over the epigastrum; nausea, but no vomiting; a red, glazed tongue; gums congested, with some hemorrhage; conjunctivæ jaundiced and injected; and, withal, the facies, which we regard as almost characteristic. Before death, patient exhibited the nervous phenomena of uraemic poisoning, and died at 12:30 p. m. July 17, with a temperature of 109° F.

Diagnosis, yellow fever, indorsed by physicians in attendance, Drs. Veazie, Jamison and Miles.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, June 17, 1882.

Dr, Kelly, President Galveston Board of Health, also Presidents of Boards of Health of Tennessee, Mississippi, Alabama and Florida, and to the Associated Press:

This day (July 17), about 2 p. m., I was requested by Dr. Miles to examine a corpse lynig in the dead-house of the Charity Hospital. *Exterior of body*, golden colored; no marked mottlings of dependent portions. Unusual golden color of integuments; fibrous tissues and coats of vessels and serous membranes yellow from the diffusion of bile. Heart normal in size, firm in texture; under microscope transversed striæ of muscular tissue distinct; no fatty degeneration of heart. Textures of heart and pericardium discolored by bile. Liver congested and of a browisnh red color, with portions of a lighter shade; under microscope, liver cells distinct, with no marked accumulation of oil globules, as in the liver of specific yellow fever. Mucous membrane of stomach highly congested; contained two fluid ounces of a reddish-colored liquid, congealable by heat and nitric acid, and abounding with epithelial cells of mucous corpuscles, with comparatively few blood corpuscles. Liquid of stomach contained bile.

The gall bladder contained about one and a half fluid ounces of a reddish albumenoid liquid, congealable by heat and nitric acid, containing numerous epithelial cells.

Kidneys large and congested. Urinary bladder contained about one fluid ounce of golden-colored urine, containing a moderate quantity of albumen and golden-colored casts. Many of the casts were transparent, with little or no granular matter, indicating that Bright's disease may have existed before the supervention of jaundice and fever.

History of Case.—From the Hospital Register, as well as from a searching personal investigation, I gather the following facts:

Louis Deschler, age 31; native of Germany; resident of New Orleans twelve years; brewer by occupation; is said to have had yellow fever in 1878; has suffered with a large ulcer on left leg, for which he was treated in the surgical ward of the Charity Hospital from October, 1881, to twenty-ninth December, 1881. For some years worked in Canal Brewery, near Old Basin; on twenty-ninth December, 1881, entered brewery 540 Tchoupitoulas and remained there until thirty-first March; twentieth June, 1882, entered brewery 1010 Tchoupitoulas street, near elevator. This house is the only one on the square, and is entirely isolated.

Habits like those of many brewers, intemperate. On Tuesday night, eleventh July, whilst drunk, lay during the night in open air; complained next day of sore throat, and wrapped ice around his neck. Dr. C. R. Schuppert, Jr., saw him on twelfth, and states that he was jaundiced and suffering from the too free use of alchoholic stimulants; prescribed a dose of Glauba salts; thirteenth, jaundice well marked, no fever; head cool; patient complained of chilly feelings; prescribed podophilin as a purgative. According to statements of landlady, on fourteenth (Friday) and fifteenth (Saturday) patient was alternately up and obout and lying down, and drank two bottles of wine.

Admitted to Charity Hospital morning of sixteenth instant, and stated that he had suffered with access of fever every second day. Fever increased at 7 p. m.; temperature of axilla, 104° F; seventeenth, at 9 a. m., temperature 105°; 12 m., 107°; 1 o'clock p. m., temperature of axilla 109.5°. The patient died in less than twenty minutes after this rapid rise of temperature.

We have in this case a history embracing intemperance, intense jaundice, free purgation, no vomiting, albumenauia, congestion of internal organs, rapid rise of temperature, and death.

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

COPY OF LETTER FROM DR. CHAS. R. SCHUPPERT, WHO ATTENDED TO L. DESCHLER, ON TCHOUPITOULAS STREET.

NEW ORLEANS, July 18, 1882, 1 P. M

To Edw. Booth:

The man who died at the Charity Hospital did not show any symptoms whatever of yellow fever.

My diagnosis is gastro-duodenites, brought on by over-indulgence in spirituous liquors and exposure. I will gladly give any further information required.

It is as ridiculous as unjust to even surmise yellow fever in this case.

With great respect I am yours,

(Signed) CHAS. R. SCHUPPERT.

In addition to this Dr. Schuppert was visited by a *Picayune* reporter yesterday. He stated that the patient, Deschler, was represented to be sick from lying out at night when intoxicated. On Thursday last, when Dr. Schuppert examined him, he says Deschler had no sign of fever whatever. He had a cold clammy sweat upon him at that time, and his eyes were injected with bile. He complained of a pain in the stomach. For many days previous to this attack he was complaining of indigestion, with a slight pain in the abdomen.

Dr. Schuppert states that he prescribed for jaundice, caused by an inflammation of the stomach and duodenum, technically called duodenites.

Dr. Schuppert says he was informed that on the following evening, in addition to drinking spirituous liquors and beer, Deschler drank two bottles of red wine. The next morning he was conveyed to the Charity Hospital.

The men present at the autopsy were Dr Joseph Jones, President of the State Board of Health; Dr. S. S. Herrick, Secretary of the Board; Dr. S. E Chaillé, resident member of the National Board of Health; Dr. Thomas Layton, Vice President of the Board of Administrators of the Charity Hospital; Drs. A. B. Miles and D. Jamison, respectively, Chief and Assistant House Surgeons of the hospital.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, July 18, 1882.

Dr. Mandeville, Sanitary Inspector Fourth District:

Sir—In consequence of the occurrence of a severe case of disease, attended with jaundice and high fever, at No. 1010 Tchoupitoulas street, and the fatal termination in the Charity Hospital, on the seventeenth instant, you will proceed at once to execute the following:

(a) Proceed at once with your sanitary officers to 1010 Tchoupitoulas street, and make a thorough inspection.

(b) Proceed at once to disinfect and fumigate the premises.

(c) Keep the brewery, at No. 1010, near the grain elevator, under careful observation, and make inquiry as to prevailing diseases.

(d) Extend inspection and disinfection to the squares around 1010 Tchoupitoulas street.

(e) Act at once with energy, and report result to President of Board of Health.

Respectfully,

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

NEW ORLEANS, LA., July 25, 1882.

Joseph Jones, M. D., President State Board of Health:

Sir—I would respectfully state I did not understand that a report was desired to be made on the twentieth instant, as I was anxious to obtain all facts relating to the case of Louis Deschler before doing so.

On the eighteenth instant, in compliance with written instructions from you, I proceeded with my officers to the brewery, No. 1010 Tchoupitoulas street, and there fumigated thoroughly the room and bedding that had been occupied by Louis Deschler, after which the vault was disinfected with a solution of carbolic acid and fenic sulphate. The drains and gutters connected with the brewery were also cleaned and disinfected with the same material. Chloride of lime was sprinkled around the yard. The batture of the river front was also treated in a like manner.

All the vaults, drains and gutters from Washington to Toledano, and from the river front to Annunciation street, have been thoroughly cleansed and disinfected with the copperas and carbolic acid solution, all of which I superintended personally.

As regards the loaning to the Sanitary Auxiliary Association of copperas, I would simply state that during my absence from the city, Dr. Bayley loaned them thirteen barrels of copperas, which has since been returned, and which *we* are now using.

A requisition was made from this district on the Board of Health for one barrel of carbolic acid. We received only twenty gallons. The Sanitary Auxiliary Association furnished the lime and one-half barrel of acid, also one cart and four men, the Administrator of Improvements giving us the use of one man and a wagon.

We are still disinfecting block by block, and by Saturday will have reached Laurel street. The health of the inhabitants in this locality is good.

We have consumed twelve barrels of copperas, and have eight on hand. No copperas has ever been distributed gratuitously amongst the citizens in this district from this office, except when they called in person for it.

The Sanitary Auxiliary Association have, however, distributed packages through a portion of this district.

All of the disinfection and fumigation which has been done in this district has been under the direct control and supervision of myself and officers. It is but just to ourselves that *we* should not allow the Sanitary Auxiliary Association to take all the credit upon themselves in this matter, for we have done the work, and can do as well without them as with them.

Very respectfully,
W. R. MANDEVILLE, M. D.,
Sanitary Inspector Fourth District.

NEW ORLEANS, July 27, 1882.

Joseph Jones, M. D., President Board of Health:

Sir—In compliance with your verbal request of the twenty-sixth instant, I have the honor to make the following report regarding the case of Louis Deschler, No. 1010 Tchoupitoulas street:

Mr. Jacob Web, No. 1005 Tchoupitoulas street, testifies as follows: Knows Louis Deschler one year, says that he complained about eight or ten days before going to the hospital, thinks he went to the hospital in a street car, habits have been intemperate.

Mr. J. Jung, No. 1013 Tchoupitoulas street, says that he has known Mr. Deschler for three weeks before he went to the hospital, and told him that when he first saw him, that he had jaundice, and also says that his habits were intemperate.

Chas. Horning, barber, No. 1019 Tchoupitoulas street, says that he shaved Deschler several days previous to his sickness, and that he was then yellow; knows positively that for two months he had a yellow appearance, and that he never had any communication with the shipping; says that he went to the hospital in a street car.

Mrs. Bassimer, who lives at the brewery, says that he worked there twenty-seven days, and in that time had no communication with the shipping; thinks that the statement of Dr Schuppert, as she read it in the paper, is the correct one.

Andrew Miller, of the same place, coincides with the above statement in every particular.
These are all the facts that can be obtained in regard to this case, and can be sworn to if required.

Very respectfully,
JOHN LOGAN,
Sanitary Officer Fourth District.

NEW ORLEANS, La., September 13, 1882.

Joseph Jones, M. D., President Board of Health:

Sir—I enclose a condensed report of the case of Louis Deschler for your consideration, supposed to have died of yellow fever, in the Charity Hospital, on the seventeenth day of July, 1882. The testimony of the neighbors regarding his intemperate habits are so unanimous that I have not embodied their statements in this report. They can, however, be furnished *in extenso* if necessary.

Very respectfully,
W. R. MANDEVILLE, M. D.,
Sanitary Inspector, Fourth District.

Louis Deschler, age 31 years, a native of Alsace, was admitted into the Charity Hospital, July 16, and died July 17, 1882. His previous history, as far as can be obtained, is as follows: Has been a resident of this city for the past twelve years, was always a man of intemperate habits, drank freely of beer, and was often drunk; has always worked in a brewery, and never on the docks or elevator. He was employed at the brewery of Mr. Mouse, No. 1010 Tchoupitoulas street; he worked there twenty-seven days, when he was taken sick; fourteen days previous to his confinement to bed his friends noticed that he had a jaundiced hue, and that he had been indulging freely in all kinds of ardent liquors, and slept in the brewery on sacks, taking but little care of himself, and being constantly exposed to all kinds of weather. Dr. Charles E. Schuppert attended the man three days previous to his admission to the hospital; he prescribed a simple purge, and looked upon the man as having an attack of jaundice.

On July 16 the man was removed to the hospital (in street car) and died the following day. His friends state that, previous to his removal to the hospital, he drank two bottles of claret, and also partook freely of lemonade to quench his thirst.

A post mortem examination was held, the result of which was made public through the daily prints. A section of the liver, spleen and kidneys were furnished me for microscopic examination by the President of the Board of Health, and on careful examination there was nothing found to justify the suspicion of this being a case of yellow fever. I am now mounting stained specimens of *these* organs, and will furnish them for examination to those who desire to see them.

All of which is respectfully submitted.

W. R. MANDEVILLE, M. D.,
Sanitary Inspector, Fourth District.

CASE OF YELLOW FEVER.

JOHANNES STROH, NATIVE OF GERMANY; AGE, TWENTY-TWO YEARS; CIGAR-MAKER; RESIDENT OF NEW ORLEANS TWO YEARS; ATTACKED WITH YELLOW FEVER JULY, 27, 1882, 10. P. M.; DIED AUGUST 17, 1882, 6 P. M. AT No. 25 ENGHIEN STREET, NEW ORLEANS, LA. MEASURES OF DISINFECTION TAKEN BY BOARD OF HEALTH.

About 2 o'clock Tuesday afternoon, August, 1, 1882, Dr. V. C. Frogne reported to the President of the Board of Health, that he had a *suspicious case of fever* at No. 25 Enghien street, Third District.

The President of the Board of Health, accompanied by Dr. Frogne, immediately visited No. 25 Enghien street, and found the patient Johannes Stroh, with the following symptoms:

Surface of face and body moderately jaundiced, of a light yellow color; Coma: eyes and mouth tightly shut; if an effort was made to open the eyelids by force, they were closely and strongly contracted, and considerable force failed to open the mouth; twitcheng of muscles and face. Temperature of axilla 103; pulse 116. Retention of urine. Introduced catheter and drew off about four ounces of high colored deep orange-red turbid urine, which proved to be albumenous, and contained numerous cylindrical yellow granular casts, and detached cells from the tubuli uriniferi.

Upon careful examination, the President of the Board of Health ascertained the following facts concerning the history of this case.

Johannes Stroh, aged twenty-two years, a native of Baden, Germany, came to New Orleans, April 28, 1880, and went immediately to Little Rock, whence he returned to this city in October of the same year. For several months he has worked in the mould department of S. Hernsheim & Bro's. cigar factory. Stroh resided at No. 25 Enghien street, with the family of Jacob Wipf, a shoemaker, which consists of five persons besides Stroh, namely, Wipf, fifty years old, who had yellow fever in this city in 1867; his wife, forty-two years old, German by birth, and a resident of this city since 1865, having passed through the epidemics of 1867 and 1878, but is not known to have had the fever; a daughter, Louise, sixteen years old, a native of New Orleans; a second daughter, Selena, ten years old, born in this city, and a third daughter, Lizzie, eight years old, also a native, and known to have had the fever in 1878. The other two girls have constantly resided in this city, but have not had yellow fever. The entire household is thus shown to have been acclimated, with the exception of Stroh, the lodger.

Mrs. Wipf states that Stroh came home on Thursday night, July 27, apparently well, but was taken sick about ten o'clock, saying he had taken cold. Friday morning, the twenty-eighth, he went to work, but came home at nine o'clock in the morning, with

burning fever, and remained at home during the day. On Friday evening Mrs. Wipf gave him a hot foot-bath and a dose of castor oil. He coughed a great deal, and said his trouble was caused by taking cold. On Sunday, fever continued, and the patient was delirious.

On Sunday morning, July 30, at nine o'clock, Dr. V. C. Frogne, of 77 Enghien street, was sent for. He found a temperature of 106 Fahrenheit, under the patient's tongue, and a pulse of 130. The patient's tongue was dry and coated, gums red and soft, no vomiting, no signs of jaundice, urine scanty. Gave patient 8 grains of calomel, followed by quinine in five grain doses every two hours, until twenty grains had been taken. The same evening the patient's temperature was 105, pulse 110. Sunday night he vomited bilious matter, was restless and delirious.

On Monday morning the patient showed a temperature of 102 and a pulse of 112. He was delirious. Administered quinine in five grain doses every three hours, until twenty grains had been taken. Vomited bilious matter, flecked with brown or coffee ground particles, spit a little blood from gums, urine scant; did not see patient that night. On Tuesday morning the armpit showed heat of 102 with a pulse of 99. Patient vomited bilious matter, flecked with brown specks, and showed outward signs of jaundice, with eyes bloodshot. The attending physician then thought the case was so much like yellow fever that soon after noon he reported the matter to the President of the Board of Health.

At two o'clock, the President of the Board of Health was at the patient's bedside and found his temperature 162 and pulse 116. He was delirious, kept his mouth and eyes tightly closed and exhibited much nervous agitation. By means of a catcheter the bladder was emptied of four ounces of a high-colored, turbid urine, which being tested at the neighboring drugstore of C. F. Seeman, 513 Royal street, exhibited albumen, and showed a specific gravity of 1.020. The surface of the body was jaundiced, gums swollen.

Dr. Jones, at 5 o'clock, notified Dr. Faget, chairman, and Dr. Pratt, members of the Committee on Contagious Diseases, and the resident official of the National Board of Health, of the existence of the case, and requested the committee to examine it. Inspector Kohlhaase was instructed to keep in communication with Dr. Frogne, and report the progress of the disease.

The committee made the examination, and reported the case to be yellow fever. The patient subsequently died during the night.

NEW ORLEANS, August, 1, 1882.

Dr. S. E. Chaillé, Supervising Inspector, National Board of Health:

Sir—A case of yellow fever at No. 25, Enghien street, name; Johannes Stroh; under investigation. Drs. Faget and Pratt notified.

Respectfully, JOSEPH JONES M. D.,
President Board of Health, State of Louisiana.

Mr. Kohlhaase reported that the patient died at 6 o'clock on Tuesday evening, and a post-mortem examination was arranged for Wednesday morning, at 9, o'clock, at which Drs. Jones, Faget and Pratt, of the State Board of Health, Dr. Chaillé, of the National Board, and Dr. Frogne, attending physician, and others, were present.

OUTLINE OF RESULTS OF POST-MORTEM EXAMINATION.

Surface of yellow color, dependent portions of spine, of trunk, neck and extremities mottled. Dura and pia mater of brain congested. Blood-vessels of cerebral substance congested. Lungs normal, mucous membrane of stomach highly congested and of a scarlet and purplish ecchymosed appearance over a considerable portion. Stomach contained about six fluid ounces of black vomit, which, upon careful microscopical examination, was found to contain blood corpuscles, mucous corpuscles, masses of hæmatin, epithelial cells from the mucous membrane of the stomach, bacteria, etc., and spores of fungi. Liver yellow, and in a state of "acute fatty degeneration." Microscopical examination revealed large numbers of fat globules within and around the heptic cells.

Heart of brownish yellow color, and softer than usual, and, upon microscopical examination, numerous oil globules were found, within and around the muscular fibrillæ of the heart. The striæ of the muscular fibres were not as distinct as in the normal heart, or in the heart of malarial fever.

Kidneys congested and ecchymosed. When sections were subjected to microscopical examination, many of the tubuli uriniferi were found filled with detached cells, granular matter and oil globules.

The physicians present were unanimous in regarding the lesions as characteristic, of yellow fever.

Immediately after the post-mortem examination, on Wednesday morning, August 2, 1882, about eighteen hours after the case was seen by the President of the Board of Health, he sent to Dr. Atkinson, President of the Board of Health, Nashville, Tenn., to Dr. R. M. Swearingen, Health Officer of the State of Texas, at Austin, to Dr. W. D. Kelly,

President of the Galveston Board of Health, to Dr. Johnston, Secretary of the State Board of Health of Mississippi, at Jackson, to Dr. Fournier, Health Officer of Mobile, and to Governor McEnery, at Baton Rouge, the following telegram:

"A case of yellow fever reported at No. 25 Enghien street, Third District, yesterday, at 2 p. m. Died during the night. The Board of Health has taken all necessary measures of disinfection, fumigation and isolation. No other case known in the bounds of the city. City healthy and in good sanitary condition. Death rate per 1000 whites, 26.61.

JOSEPH JONES, M. D.,
President Board of Health.

The following instructions were issued:

NEW ORLEANS, August 2, 1882.

Dr. E. J. Mioton, Sanitary Inspector, Third District:

Sir—The Sanitary Inspector of the Third District will proceed to execute the following at once:

1. Disinfect and fumigate the house, yard and surroundings of No. 25 Enghien street.
2. Destroy by fire the bed, bedding, bed clothes and wearing apparel of Johannes Stroh, who died of yellow fever last night.
3. Allow no gathering of people in and around No. 25 Enghien street.
4. Cause the immediate burial of the body of Johannes Stroh.
5. Place your officers in charge of No. 25 Enghien street and of the surrounding blocks, and carry forward systematic inspection and disinfection throughout this section of the city.
6. The Sanitary Inspector should attend to the execution of these measures in person, and report all facts immediately to the Board of Health.

I send man and cart, with one barrel carbolic acid, one-half barrel sulphur and four barrels copperas. I have ordered Sanitary Policemen Wiltz and Blanchard to report to you for duty.

JOSEPH JONES, M. D.,
President Board af Health, State of Louisiana.

BOARD OF HEALTH,
New Orleans, August 2, 1882.

Hon. Joseph A. Shakspeare, Mayor City of New Orleans:

Dear Sir—The occurrence of a case of yellow fever at No. 25 Enghien street, in the Third District, demands prompt and decisive action on the part of the Honorable Administrators and Chief Executive Officer of New Orleans. The following measures are respectfully and earnestly commended to your Honor.

1. The detail of a sufficient force of laborers for the thorough cleaning of the gutters, streets, alleys and foul premises of the section of the Third District in and around No. 25 Enghien street.
2. Quick-lime and copperas should be freely used in the gutters and damp premises, and all unpainted woodwork should be whitewashed.
3. This section of New Orleans, embracing eight blocks on the river front, and eight blocks in depth (sixty-four blocks) with Enghien street as the centre, should be furnished with 128 barrels of lime (two barrels to each block), thirty-two barrels of copperas, and eight barrels of carbolic acid. These disinfectants will be distributed under the immediate direction of the Board of Health
4. Two carts and four men for distributing of lime and disinfectants.

Respectfully, your obedient servant,
JOSEPH JONES, M. D., President Board of Health.

The Mayor immediately indorsed the communication as follows:

"Referred to the Aministrator of Improvements, who will purchase the within articles (which will be paid for in cash) and distribute the same under the supervision of Dr. Jones, of the Board of Health.

"You will please give this your immediate attention.

"Yours respectfully,
"JOS. A. SHAKSPEARE, Mayor."

NEW ORLEANS, August 2, 1885.

Hon. John Fitzpatrick, Administrator of Improvements. City Hall:

Dear Sir—I would respectfully urge upon the Honorable Administrator of Improvements the necessity of placing a large force of laborers, with two carts and four men, in the Third District.

The occurrence of a case of yellow fever at 25 Enghien street renders it necessary that the gutters, streets, alleys and foul premises of this section of New Orleans should be thoroughly cleansed and disinfected.

Quick-lime should be freely used in the gutters of damp premises, and all unpainted woodwork should be whitewashed.

I advise the Honorable Administrator of Improvements to furnish at once to this section of New Orleans, embracing eight blocks on the river front and eight blocks in depth (sixty-four blocks), with Enghien street as the centre, 128 barrels of lime (two barrels to each block) and thirty-two barrels of copperas, and eight barrels of carbolic acid. Respectfully, your obedient servant,

JOSEPH JONES, M. D.

NEW ORLEANS, August 2, 1882.

Hon. Albert Baldwin, President New Orleans Waterworks Company:

Dear Sir—I would respectfully urge upon the President of the Waterworks Company the necessity of opening the plugs along the river front for several squares back in the Second and Third Districts.

The occurrence of a case of yellow fever at No. 25 Enghien street calls for the active assistance and co-operation of the Waterworks Company in the efforts to improve the sanitary conditions of the central portions of New Orleans.

Respectfully, your obedient servant,

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

MAYORALTY OF NEW ORLEANS,
New Orleans, La., August 3, 1882.

Joseph Jones, M. D., President Board of Health:

Sir—His Honor the Mayor is in receipt of your communication of this date, and directs me to notify you that your suggestions meet with his approval, and he has directed the Administrator of Improvements to purchase the articles mentioned in your communication, and to have them distributed and used under the immediate direction of the Board of Health.

By direction of the Mayor,

E. L. BOWERS, Chief Clerk.

Dr. Bayley, Sanitary Inspector First District, and Dr. Mandeville, Sanitary Inspector of the Fourth District, were assigned to temporary duty in the Third District, to aid Dr. Mioton.

It was arranged that an inspector was perpetually on duty directing the sanitary operations in the Third District.

With reference to the origin of this case, the following is a brief summary of the facts:

The house in which Stroh died, 25 Enghien street, is on the north side of the street, between Decatur street and the levee, and two doors from the north corner of Decatur, It is an old two-story brick building, in which Stroh had a back room on the ground floor. The house in which Forbes, the sailor from Havana by the steamship Marco Aurelio, first showed symptoms of yellow fever, is on the same square, on the opposite side of the street, but in full view, and 250 feet away. The number of the house was given in previous statements as 100 Levee street, but being on a corner, its side doors is 4 Enghien street, so that the near proximity of the building may be seen at a glance. The neighborhood is inhabited almost exclusively by acclimated persons, except an occasional new comer, like Stroh. Several cases of malarial fever have occurred lately in that locality, but there was nothing particularly suspicious, as the patients have usually been acclimated persons.

No detailed connection between Stroh and Forbes, who died on the twenty-seventh of June, of yellow fever at the Charity Hospital, but the proximity of their respective residences creates a strong presumption of such communication, and investigation may establish it.

Inquiry of the Messrs. Hernsheim developed the testimony from their books that their last importation of leaf tobacco and cigars from Havana, the sole articles they get from that port, was received here February 14 of this year. In June they also received several cigar hands direct from Cuba, but they did not work in the same department with Stroh, and nothing can be traced to the factory.

The case points to Forbes, the sailor, who died in the Charity Hospital, but was taken sick at his lodgings, No. 4 Enghien street, and from there, in all probability, the disease has emigrated.

OFFICE SANITARY INSPECTOR, THIRD DISTRICT,
NEW ORLEANS, LA., August 31, 1882.

Joseph Jones, M. D., President Board of Health:

Sir—The following brief report of sanitary operations performed in the Third District is respectfully submitted for consideration:

As is shown by considering the tables annexed to this report, the work performed during the month has been considerable, notwithstanding the warm weather; but it must be remembered that during the month two cases of yellow fever have taken place, one case at 25 Enghien street, the other at 85 North Peters street; and, therefore, our sanitary force had been at one time greatly increased, first by two medical inspectors, Drs. Bayley and Mandeville, by six sanitary officers of the Board of Health, ten men from the City Hall and three from the Auxiliary Sanitary Association.

During the month 4395 inspections were made, 605 notices to empty privy vaults served, and 84 squares or 3240 premises thoroughly cleansed and disinfected, also two squares or 86 houses whitewashed.

Since the eighth of August no other case of yellow fever has been reported, and the health of the district continues to be excellent, though we have on hand at the present date five cases of small-pox.

Very respectfully submitted,

EUG. J. MIOTON, Sanitary Inspector, Third District.

CASE OF YELLOW FEVER—MALACHIAS ENGLUND.

BOARD OF HEALTH, 12 m., August 10, 1882.

Dr. E. L. Mioton, Sanitary Inspector Third District:

Sir—You will please report at once at the office of the Board of Health, as I desire to confer with you on a matter of much importance. Respectfully,

JOSEPH JONES, M. D.

Dr. Mioton was informed that a man had been taken sick, August 9, at 85 North Peters street, between Mandeville and Spain streets, at a carpenter shop, with chill, at 4 a. m. Entered Charity Hospital the same day. At 12 m. August 9, temperature 104, pulse 90. 3 p. m., temperature 104, pulse 80. August 10, the nurse is said to have taken the temperature at 6 a. m., and found it to be 101. Dr. Miles took the temperature at 8 a. m., and found it 103, with pulse 59. Slight trace of albumen was said to have been found in the urine.

Dr. Mioton was directed to investigate the case; to examine the house from whence the patient had been removed; to gather all the facts; to cleanse, fumigate and disinfect the premises, and order privy immediately emptied.

Dr. Faget, Jr., gave the above facts.

Dr. Mioton reported at once, as I had sent my horse and carriage for him.

BOARD OF HEALTH, August 10, 1882.

Dr, J. C. Faget, Chairman Committee on Infectious and Contagious Diseases:

Dear Sir—I would respectfully request that, as Chairman of the Committee on Infectious and Contagious Diseases, you should at once repair to the Charity Hospital, and examine critically a man in ward 21, from carpenter shop, No. 85 North Peters street, between Mandeville and Spain streets, taken sick, at 11 a. m., August 9, with chill.

Please report your views of the case, at the earliest practicable moment; and if possible be present at the meeting of the Board of Health, this evening, and give the Board the benefit of your extended experience.

Respectfully, yours.

JOSEPH JONES, M. D., President Board of Health.

BOARD OF HEALTH, August 10, 1882.

Dr. George K. Pratt, Member of Committee on Infectious and Contagious Diseases:

Dear Sir—Will you, in your official capacity as member of the Committee on Contagious and Infectious Diseases of the Board of Health, of the State of Louisiana, repair at once to the Charity Hospital, and examine critically a man in ward 21, carpenter, from 85 North Peters street, between Mandeville and Spain streets, who was attacked with chill August 9, and has high fever. Please report at earliest convenience; and hope that you will be present at the meeting of the Board of Health, and give the results of your investigation and experience.

Respectfully, yours,

JOSEPH JONES, M. D., President Board of Health.

In order to facilitate the investigation, I requested Dr. Faget, Sanitary Inspector of the Second District, to visit his patient in my carriage, and to return to the Board of Health from the Charity Hospital. Dr. Faget reported as follows:

Malachias Englund, 30 years old, native of Cardiff (Wales), two months in the city, taken sick August 9, at 4. a. m., with chill, at No. 85 North Peters street, between Mandeville and Spain; admitted in the Charity Hospital, August 9, morning; at 12 m., August 9, temperature 104, pulse 90; 3 p. m., August 9, temperature 104, pulse 80; a. m., August 10, temperature 103, pulse 59 (albumen in urine); 2 p. m., August temperature 102⅘, pulse 60 (⅓ albumen at 10 a. m).

CASE OF MALACHIAS ENGLUND, WHO DIED OF YELLOW FEVER, IN THE CHARITY HOSPITAL, NEW ORLEANS, AUGUST 14, 1882.

CLINICAL REPORT, CHARITY HOSPITAL.

NEW ORLEANS, August 9, 1882.

Malachias Englund, carpenter, aged 30 years, native of Cardiff (Wales) Time in the city two months and a half, married; does not drink whisky, but occasionally drinks a moderate quantity of beer. Has not been exposed to the sun, as he works in carpenter shop, No. 85 Peters street. He went to bed feeling perfectly well last night, at an early hour. He awoke at 3 a. m. with a chill. When the chill passed off he was brought to the hospital at 8 a. m. First observation at 9.15 a. m.; temperature in mouth 103 2-5°, pulse 92; face injected, eyes brilliant, conjunctiva red, acute cephalalgia, general pains particularly in lumbar region; skin dry and hot Pulse full, hard and *not fast;* disposition to vomit. scant urine (no albumen); tongue red on edge, thickly coated and dry; great thirst, peculiar odor of breath, pulsations at epigastrium extremely violent.

Patient states he has only been in the city two months and a half; he came from Cardiff (Wales), on steamship ————. Has not been unwell since he came here until 3 o'clock a. m., August 9, 1882. Says it is only two blocks from where last case came from.

Temperature at 8:45 a. m., 103 2-5; temperature taken just after a bath. Been working for Mr. Hickey, 85 Peters street.

August 10—Temperature at 8 a. m., 103 F., pulse 69, respiration 17. Vomited some bilious matter this morning Gums somewhat congested. No hemorrhage; no epigastric tenderness. Urine examined at 9:45 a. m.; albumen to about one-fourth of whole amount.

August 11—Temperature 104½, pulse 52, respiration 22. Patient this morning calm and resting easy; says he is suffering no pain whatever. Urine examined again this morning, one-fourth of which is found to be albumen. No tendency to suppression; no epigastric tenderness

August 12—Temperature at 12, 104; temperature at 6 p. m., 104; respiration, morning, 17; temperature, morning, 103½; evening, 104; pulse, morning, 92; evening, 80.

August 13—Temperature, morning, 101; evening, 102; pulse, morning, 69; evening, 64; respiration, 17.

August 14—Temperature, morning, 104½; respiration, 22.

REMARKS.

August 10—At 10 a. m. urine one-fourth albumen.

August 12—Pulse, morning, 60; evening, 70; respiration, morning, 24; evening, 30; temperature, morning, 102; evening, 103.

August 13—Pulse, morning 60, evening, 70; respiration, morning, 24; evening, 30½; temperature, morning, 103; evening, 103.

August 14—Pulse, morning, 62; evening, 74; respiration, morning, 26; evening, 23, temperature, morning, 103.5; evening, 103 6.

August 15—Pulse, morning, 100; evening, 110.5 temperature, morning, 104; evening, 105.

From August 10, when the urine was found to be highly albumenous (one-fourth in volume), the temperature ranged between 103.5 and 104, until August 15, when the temperature was one degree higher than it had been at any other time.

After August 12 the patient became restless, tossing about constantly in bed. The symptoms enumerated at the first observation became intensified, and he died August 15, at 4 o'clock p. m., having been sick seven days and twelve hours. Death occurred without any protracted struggle, apparently from a uraemic convulsion. Diagnosis: Yellow fever.

CHARITY HOSPITAL, AUGUST 16, 1882.

Dr. Joseph Jones, President Board of Health:

Dear Doctor—In compliance with your request, I herewith transmit report of the case of Malachias Englund, who died in the hospltal of yellow fever. * * * I inclose report of our pathologist.

Respectfully,

[Signed] A. B. MILES, M. D., House Surgeon.

PATHOLOGICAL DEPARTMENT, CHARITY HOSPITAL, AUGUST 16, 1882.

Dr. A. B. Miles, House Surgeon:

Dear Sir—I herewith present the report of the pathological condition of the organs of the body of Malachais Englund, as revealed by the autopsy.

The urine examined the day before death contained a considerable quantity of albumen, and also bile, besides great numbers of leucocytes (probably from the bladder), with epithelial cells from this organ, and a few granular cylinders from the kidneys. The same elements were found in the urine taken from the bladder after death.

The liver presented in its greatest part the so-called nutmeg appearance, while in some parts it showed a blue color, due to the congestion of its blood vessels; besides this, however, a decidedly golden color, due to the presence of bile in the organ. The gall-bladder contained a quantity of dark-brown bile. The microscopical examination showed the hepatic cells infiltrated with a considerable number of larger and smaller fat globules.

The kidneys presented a dark, bluish-red color, both upon the outer and the cut surfaces, indicating a high state of congestion. Small yellow spots were observed upon the cut surfaces, which, upon microscopical examination, proved to represent uriniferous tubules, the epithelial cells of which contained larger and smaller fat globules. These fat globules appear to represent rather a fatty infiltration than true degeneration.

The supra-renal bodies presented upon the section an abnormal appearance, the substance being very dark brown, due to the extravasation of free hæmoglobin.

The stomach was large, and its mucous membrane appeared greatly swollen. Upon the internal surface of the latter were observed many blue patches, and also spots of ecchymoses, indicating previous congestion. The liquid found in the stomach after death contained great numbers of gastric epithelial cells, and also a number of decolorized colored blood corpuscles. Besides these elements, there were a small number of small masses, consisting of conglomerated, decolorized colored blood corpuscles, with free hæmoglobin, imparting to the whole a yellow color. The latter elements were the only representations of the so-called black vomit met with in this fluid.

The spleen was considerably enlarged by congestion, and presented a dark-brown color.

The pia mater of the brain was congested throughout, presenting very many patches of extravasation of free hæmoglobin. The substance of the brain was also congested.

The heart was quite large; microscopical examination showed the commencing fatty degeneration of its muscular elements.

In taking the above-stated pathological condition of the respective organs examined in this case into consideration, as a totality, I may fairly pronounce them as characteristic of yellow fever. The condition of the brain, and that of the heart, particularly, may, in this case, be looked upon as pathognomonic. In all my former autopsies, I have never met with a brain exhibiting more the congestion of this organ, in its typical form, than the case in question.

Very respectfully,

H. D. SCHMIDT, Pathologist.

EXTRACTS FROM PROCEEDINGS OF THE BOARD OF HEALTH, AT THE MEETING AUGTST 17, 1882. RESOLUTIONS BY HON. I. N. MARKS AND THE HON. ED. BOOTH, RELATIVE TO UNITED STATES MARINE HOSPITAL SERVICE AND THE APPROPRIATION BY CONGRESS.

The regular weekly meeting of the Board of Health was held, Dr. Joseph Jones, President, in the chair, and Drs. Faget, Von Gohren, Pratt and Kells, and Messrs. Marks, Booth and Bosworth present.

Dr. Jones referred to the continued healthy condition of the city, and reported that during the five days of the present week there were only forty deaths from all causes. This, with a population of over 220,000, was almost unparalled in this or any other country in mid-summer. There was not at present a single case of yellow fever in the city.

Dr. Jones stated that he had received a copy of the printed circular issued from the office of the Supervising Surgeon-General of the United States Marine Hospital Service, relative to the disposition of the hundred thousand dollars in the hands of the Secretary of the Treasury in threatened or actual epidemics.

Under date of August 15, Dr. R. A. Bayley, Sanitary Inspector of the First District, reported that the front of the same, from Magazine street to the river, had been thoroughly inspected, disinfected and cleaned up.

Upon the written request of Dr. Bayley, he was granted a leave of absence for six weeks, ill health of himself and wife being assigned as the reason.

Dr. W. R. Mandeville, Sanitary Inspector of the Fourth District, was assigned as Sanitary Inspector of this district also, during the absence of Dr. Bayley.

Dr. Jones read a list of the amounts drawn to the thirty-first of July by the Board of Health against the appropriation of $10,000 by the Common Council for the year 1882, as follows: January, $575; February, $625; March, $625; April, $637 50; May, $650; June, $650; July, $650. Also in July the sum of $782 91 was paid by the city to G. R. Finlay & Co., and $197 90 for stationary, on account of the Board of Health, making a total of $5,393 31.

The monthly pro rata of the appropriation is $833, and the pro rata for seven months to August 1, $833 33, leaving a balance in favor of the board to that date of $34 02.

Dr. Jones read an elaborate article on the subject of the public health and quarantine under the laws passed by the last General Assembly.

The President stated that he had instructed Dr. Finney, the resident physician at the Mississippi Quarantine Station, to hold vessels from Mexican ports for observation till satisfied, as all Mexican ports were considered in the light of suspected ports.

A communication from Mr. N. G. Gunnegle and others, residing at McDonoghville, recommending that syphons be conveyed from the river over the levee, in order to produce a current of fresh water of sufficient force to cause the present stagnant water to recede, was referred to the committee on conference.

The committee reported recommending the petitioners to make their application to the Administrator of Improvement.

A communication from the Produce Exchange was read, inclosing a copy of a resolution adopted yesterday, and asking that the Board of Health, in the event of any case of yellow fever occurring under its jurisdiction, report the same as soon as ascertained to the Exchange, to be posted on the bulletin boards for the information of all the members of the body. The request will be granted.

Mr. Marks offered the following resolution, which was unanimously adopted:

Whereas, the President of the United States and the Secretary of the Treasury have very wisely determined that the appropriation made by Congress in aid of State and local boards of health shall be expended by the Marine Hospital Service of the government, be it therefore

Resolved, That the State Board of Health of Louisiana will thoroughly co-operate with the Marine Hospital Service of the government in all measures having for their object the preservation of the public health and the improvement of the sanitary condition of this city and its territory.

Resolved, That the thanks of this board be tendered to the President of the United States, the Secretary of the Treasury and Surgeon-General Hamilton, for their wise, prompt and efficient action in aid of State and local boards of health.

Resolved, That the Secretary of this board be instructed to convey copies of these resolutions to the President of the United States, the Secretary of the Treasury and Surgeon-General Hamilton.

The following resolution, introduced by Mr. Booth at the previous meeting and laid over for one week, came up and was unanimously adopted, with an amendment inserted that the Governer co-operate with the President of the Board.

Whereas, the Congress of the United States has generously appropriated the sum of $50,000 in care of the National Board of Health, to be applied in aid of State and local boards, therefore be it resolved by the State Board of Health of Louisiana that the President in its name be instructed to apply for $25,000 of said sum to be expended by this board under such regulation as may be deemed advisable by the Honorable Secretary of the Treasury, said disbursements to be devoted to the following objects :

Twenty thousand dollars to the improvement of the Mississippi River Quarantine Station.

Four thousand dollars for the improvement of the Rigolets Quarantine Station.

One thousand dollars for the improvement of the Atchafalaya Quarantine Station.

OFFICE SANITARY INSPECTOR THIRD DISTRICT,
New Orleans, La., October 1, 1882.

Joseph Jones, M. D., President Board of Health :

Sir—I have the honor to present for consideration the following brief report of sanitary operations performed in this office during the month of September, 1882;

The health of the community in this part of the city is very fair indeed, though variola still continues to be the prevailing disease, twenty-five cases of this malady having been reported this month. The character of this disease is of a mild type, there having been only four deaths from it during the month.

The public and private markets have been the object of a careful inspection, and it is my pleasant duty to report the same, with a few exceptions, in a fine and clean order—water supplies amply sufficient.

Eighteen hundred and six inspections were made, two hundred and sixty-five nuisances abated, and one hundred and seventy-seven notices to empty privy vaults served.

In the neighborhood of No, 312 Port street seven hundred and ninety premises were disinfected with lime, copperas and carbolic acid. A special communication to the Street Commissioner, in order to clean gutters of that vicinity, was sent, which was responded to immediately.

Respectfully submitted,
E. J. MIOTON, M. D,, Sanitary Inspector Third District.

ESTABLISHMENT OF QUARANTINE AGAINST PENSACOLA BY THE BOARD OF HEALTH OF THE STATE OF LOUISIANA.

OFFICE OF BOARD OF HEALTH,
Pensacola, Fla. August 11, 1882,

Joseph Jones, M. D., President Board of Health, New Orleans :

Dear Sir—I return thanks for telegram regarding case of yellow fever at Charity Hospital, and beg leave to say that I shall transmit you to-morrow copy of the Pensacola *Advance Gazette*, containing detailed statement regarding suspicious cases in the Spanish bark Saleta, at Sullivan's wharf, Pensacola, ten days ago. Let me observe here in reference to those cases that to our experienced eye, notwithstanding no characteristic signs or symptoms were manifested during *life*, they would have been pronounced yellow fever. The one that died, on post-mortem inspection of the body, untouched by the knife, showed bloody exudation in mouth and throat. I saw the case late in the evening of the ninth instant; one was nearly *in extremis* and died at 8 a. m., next morning. This is the case in which the sanguinolent effusion was observed. I could obtain no urine for examination. I ordered the captain to weigh anchor and proceed at once to the Quarantine Station for observation and treatment, but as she had received on board almost her whole cargo, captain concluded to put to sea.

Very respectfully and faithfully yours,

ROBT. B. S. HARGIS, M. D.,
President Board of Health.

P. S.—The dead man was ordered to be buried at sea, as he was denied interment within city limits.

Yours, etc., R. B. S. H.

CHARITY HOSPITAL, STATE OF LOUISIANA,
New Orleans, September 21, 1882.

Joseph Jones, M. D., President Board of Health, State of Louisiana. New Orleans:

Dear Doctor—In compliance with the request of the Board of Health, the following statements are furnished:

1. Number of patients in the hospital, 646. Of the acute diseases the malarial fevers and the intestinal disorders predominate.

2. Our records show the case of Englund, admitted August 9, died August 15, the last case of yellow fever in the hospital.

3. The following case, rumored suspicious, of which you inquire, is copied from our records: "John Buckley, aged sixty years, homeless, was admitted into the hospital August 10, and died August 12 of chronic gastro-enteritis."

At present no yellow fever, no suspicious case of fever, under our charge.

Very respectfully,

A. B. MILES, M. D.

OFFICE OF BOARD OF HEALTH,
Pensacola, Fla., August 10, 1882.

At a meeting of the Board of Health, held this day, the following preamble and resolutions were adopted

In view of the fact of the unnecessary alarm created by the sending off, by the Board of Health, of a vessel having on board cases of sickness, in their opinion, of a suspicious nature, be it

Resolved, That the Board of Health, as in honor and duty bound, as the guardians of the public health, will officially announce the existence of the very first case of yellow fever which may occur. It was further

Resolved, That the public be notified that the board does not apprehend the breaking out of an epidemic, the city never being in a more healthy condition, and every precaution being taken to enforce a rigid and strict quarantine—the board taking every precaution, and, in every instance, giving the benefit of the doubt to the public and not to the shipping.

On motion, the above were ordered printed in the city papers.

R. B. S. HARGIS, M. D., President.

J. C. WHITING, M. D., Secretary.

[Telegram.]

PENSACOLA, FLA., August 25, 1882.

Dr. Joseph Jones, President Board of Health, New Orleans:

This morning the mate of Italian bark Tiacenso Accame, in the stream, died, and the case pronounced yellow fever; vessel sent to Quarantine Station, when post mortem was held. On opening stomach, showed indications of black vomit matter. The vessel has been in port sixty days and came from Port Elizabeth, where yellow fever does not exist.

D. A. BRENT,
Chairman Executive Committee Board of Health.

[Telegrams.]

PENSACOLA, FLA., August 28, 1882.

Dr. Joseph Jones, President Board of Health, New Orleans, La.:

The board officially reports the existence of two cases of yellow fever in the city. No deaths.

J. C. WHITNIG, M. D., Secretary.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, August 28, 1882.

Dr. Finney, Mississippi Quarantine Station; Dr. Carson, Rigolets Quarantine Station; Dr. Sigur, Morgan City:

Yellow fever at Pensacola. Subject all vessels from that port to ten days' quarantine.

JOSEPH JONES, M. D.

PRECAUTIONS AGAINST PENSACOLA. THE PROMPT ACTION OF THE HEALTH AUTHORITIES IN KEEPING THE PESTILENCE AWAY FROM NEW ORLEANS.

New Orleans Picayune, August 30, 1882.]

The dispatches reporting a serious outbreak of yellow fever at Pensacola, for the first time made publ on Monday, were the subject of much interested inquiry and anxious comment on Tuesday. Applic tions to Dr. Jones, President of the Board of Health, elicited some information of interest as to the pr cautions which had been taken to guard against the introduction of the infection into this city from th quarter.

Dr. Jones showed from his official letter book, in the office of the Board of Health, that as early as Augu 11 he had been suspicious of possible danger from Pensacola, and on that date had issued to Dr. Finne Quaran ine Officer at the Mississippi Station, and to Dr. Carson, who holds a like position at the Rigolet orders to hold all vessels from Pensacola subject to the orders of the Board of Health. The case of t bark Iris, which had been discharged from quarantine at Ship Island with yellow fever on board, and returned to Pensacola, was not calculated to strengthen confidence in that station, which was chiefly rel on by Pensacola as an outpost for the arrest and detention of infected ships visiting the waters of W. Florida, and for that reason a close watch was set upon all water craft visiting this port from Pensacola.

The steamer Amite, sailing to Cedar Keys, but suspected of having communication with the shipping Pensacola, had been made the subject of strict observation and examination, as was reported at the l meeting of the Board of Health. A further order had been telegraphed to all the Louisiana coast quarant stations to subject all vessels from Pensacola to strict quarantine under the ten days' regulations, and Jones said he had little apprehension of danger by sea.

As to communication by land, the doctor had relied heretofore on the fact that Pensacola had been quar tined and watched by Mobile and Montgomery, and it was scarcely possible for freight or passengers to re this city without first passing an inspection before reaching Mobile; nevertheless, he had already ha conference with Superintendent Harahan, of the Louisville and Nashville Railroad, and had delivered to an order, of which the following is a copy:

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, August 29, 1882.

J. T. Harahan, Superintendent Louisville and Nashville Railroad:

Sir—You are hereby prohibited from bringing any cars, passengers, merchandise or baggage from Pe cola within the bounds of the State of Louisiana.

JOSEPH JONES, M. D.,
President Board of Health, State of Louisian

He further stated that the trains would be inspected.

The doctor said the entire matter will come up before the Board of Health on Thursday night, when further details will be arranged. In any case, he will relax no energies and neglect no precautions to protect the public health and keep the city in the excellent sanitary condition which has existed all through the summer so far.

Dr. Jones also exhibited the following correspondence on the subject of repairs to the government warehouse at Mississippi Station; it explains itself:

UNITED STATES CUSTOM HOUSE,
New Orleans, August 29, 1882.

Dr. Joseph Jones, President Board of Health, New Orleans, La.:

Work on the Mississippi River Quarantine Station will begin at once.

JOHN W. GLENN, Superintendent.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, August 29, 1882.

Gen. John W. Glenn, Superintendent United States Custom House:

Dear Sir—I desire to express the thanks of the Board of Health for the valuable efforts which you have made in behalf of the State quarantine, near the mouth of the Mississippi River; and I feel assured that the action of the Honorable Secretary of the United States Treasury in his prompt response to the telegram of his Excellency, Gov. S. D. McEnery, will command the thanks of the citizens of this State and of the entire valley.

Respectfully, your obedient servant,

JOHN JONES, M. D.

PENSACOLA QUARANTINED—DR. JONES ISSUES ORDERS PO PROTECT NEW ORLEANS BY LAND AND WATER.

Times-Democrat, Wednesday, August 30, 1882.]

Yesterday the outbreak of yellow fever in Pensacola, Fla., was the principal matter under consideration at the office of the Board of Health. For some three weeks past, the quarantine physicians, under instractions of Dr. Jones, have been on the lookout for vessels from Pensacola. On August 11, Dr. Jones instructed them as follows:

"Hold vessels from Pensacola subject to orders of Board of Health."

A few days later, August 16, Dr. Jones also instructed them, "exercise utmost vigilance with all vessels from Mexican ports. Yellow fever reported at Tampico and Tuxpan. In every case hold vessels from Mexican ports for observation until satisfied."

Upon learning of the fever at Pensacola, Dr. Jones instructed the physicians at the quarantine stations as follows;

AUGUST 28, 1882.

Dr. Carson, Miller's Bayou:

Hold Henrietta Esche ten days. Fumigate and disinfect thoroughly.

JOSEPH JONES, M. D.

AUGUST 29, 1882.

Dr. Finney, Resident Physician, Mississippi Quarantine Station:

Yellow fever at Pensacola. Subject all vessels from this port to ten days' quarantine.

JOSEPH JONES, M. D.

AUGUST 29, 1882.

Dr. Sigur, Quarantine Physician, Atchafalaya Quarantine Station:

Yellow fever at Pensacola. Subject all vessels from this port to ten days' quarantine.

JOSEPH JONES, M. D.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, August 29, 1882.

J. T. Harahan, Superintendent Louisville and Nashville Railroad:

Sir—You are hereby prohibited from bringing any cars, passengers, merchandise or baggage from Pensacola within the bounds of Louisiana.

JOSEPH JONES, M. D.

Mr. Harahan, who called on the Doctor shortly afterward, fully approved of the order, and will obey it to the letter. He informed Louisville, Pensacola, Montgomery and Mobile of it by telegraph, and also furnished a copy to the Associated Press. Dr. Jones will have an inspector placed on the trains, and take all the necessary precautions to guard against the admission into the State of any person from Pensacola. He informed the different boards of health of his action.

RIGOLETS QUARANTINE STATION,
FORT PIKE, La., August 29, 1882.

Joseph Jones, M. D., President Board of Health, State of Louisiana:

Dear Sir—I have the honor to acknowledge the arrival, this moment, 4:20 o'clock p. m., of your telegram of even date, informing this station of the presence of yellow fever at Pensacola, with instructions to detain all vessels from that port ten days in quarantine.

Very respectfully, your most obedient servant,

WM. H. CARSON, M. D., Resident Physician.

RIGOLETS QUARANTINE STATION,
FORT PIKE, La., August 29, 1882.

Joseph Jones, M. D., President Board of Health, State of Louisiana:

Dear Sir—I have the honor to acknowledge the receipt of your telegram of the twenty-eighth instant, with instructions to detain the schooner Henrietta Esche ten days and cleanse.

The vessel has already received one course of fumigation and disinfection, and they are at present scrubbing and washing all parts of the vessel that can be reached. I will give her another fumigation before releasing. All on board of the Adolphe Fluke and Henrietta Esche remain in good health and spirits.

Both vessels are anchored well out of the channel, and there is no chance of any intercourse or danger to vessels passing.

The Adolphe Flake will be released to-morrow evening (Wednesday) at 6 o'clock. She has been thoroughly attended to, and is as clean a vessel as one could wish.

I remain, sir, very respectfully, your obedient servant,

WM. H. CARSON, M. D., Resident Physician.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, August 30, 1882.

Wm. R. Mandeville, M. D., Sanitary Inspector Board of Health, State of Louisiana:

Sir—You are hereby assigned to duty at Lookout, near the boundary of Louisiana and Mississippi, and opposite the mouth of East Pearl river.

You will carry out the following instructions:

1. Inspect all trains from Mobile, and prevent the introduction into the State of Louisiana of all passengers, merchandise and baggage from Pensacola, Fla.

2. Board all vessels entering the mouth of East Pearl river, or any of the approaches in the neighborhood of Lookout, and subject all vessels from Pensacola or any other infected port to the provisions of the quarantine laws of Louisiana.

3. I have ordered Sanitary Policemen E. Bohner and L. D. Allen to report to you at Point Lookout for duty.

(SEAL.) JOSEPH JONES, President Board Health, State of Louisiana.

NEW ORLEANS, August 30, 1882.

E. Bohner, Sanitary Policeman, Board of Health, State of Louisiana:

Sir—You are hereby directed to report to Sanitary Inspector, Dr. Mandeville, for special inspection and quarantine duty at Point Lookout, near the boundary line of Louisiana and Mississippi, and opposite the mouth of East Pearl River.

[Signed] JOSEPH JONES, M. D.

NEW ORLEANS. August 30, 1882.

L. D. Allen, Sanitary Policeman Board of Health, State of Louisiana:

Sir—You are hereby directed to repert to Sanitary Inspector, Dr. Mandeville, for special inspection and quarantine duty at Point Lookout, near the boundary line of Louisiana and Mississippi, and opposite the mouth of East Pearl River.

[Signed] JOSEPH JONES, M, D.

Dr. C. Faget, Sanitary Inspector Second District:

Sir—In consequence of the temporery absence of the Sanitary Inspector of the First District, you are hereby directed and empowered to assume direction of the First District in addition to the Second District, and will discharge the duties of both districts until furthur orders. Respectfully,

[Signed] JOSEPH JONES; M. D.

OFFICE BOARD OF HEALTH. STATE OF LOUISIANA,
New Orleans, August 30, 1882.

Dr. Wm. Ryan, Sanitary Inspector Sixth and Seventh Districts;

Sir—In consequence of the temporary absence of the Sanitary Inspector of the Fourth District, you are hereby directed and empowered to assume direction of the Fourth District, in addition to the Sixth and Seventh Districts, and will discharge the Sanitary duties of these districts until further orders.

Respectfully,

[Signed] JOSEPH JONES, M. D.

NEW ORLEANS, August 30, 1882.

Mr. Ward, U. S. Customs Inspector, Lookout Station, Louisville and Nashville Railroad:

Dear Sir—The Board of Health of the State of Louisiana has assigned Dr. Wm. R. Mandeville to quarantine and inspection duty at Lookout.

Dr. Mandeville has assigned to him two sanitary officers, Messrs. Bohner and Allen.

Any assistance you may be able to render Dr. Mandeville in the discharge of his inspection duties will be appreciated by

Yours, respectfully,

JOSEPH JONES, M. D.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, August 30, 1882.

J. T. Harahan, Esq , Superintendent Louisville and Nashville Railroad Company:

Sir—The Board of Health of the State of Louisiana has assigned Sanitary Inspector Wm R. Mandeville, M. D., to duty at Lookout Station, on the Louisville and Nashville Railroad.

You will stop all trains from Mobile, for a sufficient length of time for the inspection of passengers, baggage and merchandise or freight, by the Inspector of the Board of Health of the State of Louisiana.

I have ordered Sanitary Policemen E. Bohner and L D. Allen to report for duty to Dr. Mandeville, at Point Lookout. Respectfully,

JOSEPH JONES, M. D.

LOUISVILLE & NASHVILLE RAILROAD COMPANY,
Office of Superintendent, New Orleans, La., August 27, 1882.

Joseph Jones, M. D., President Louisiana Board of Health:

Dear Sir—I enclose you circular issued in reference to suspected persons from Pensacola. I think it will assist in protecting us. I am reliably informed there are quite a number of people en route to New Orleans from Pensacola. I suggest to you that the only way to stop this is to put on inspectors. This company will

of course pass these inspectors free over this road, and will assist them all that lies in our power. Mobile just informs me that your actions in quarantining against Pensacola assists them very much, and is very much appreciated by them. I think by co-operation everything will rnn smoothly.

Yours, very truly, J. T. HARAHAN, Superintendent.

TO ALL AGENTS AND CONDUCTORS.

The Louisiana State Board of Health and the Mobile and Montgomery Boards of Health have quarantined against Pensacola. There is some fear that passengers may come to points on the New Orleans and Mobile division, and then return to those points that have quarantined. You will watch all strangers and suspicious persons, and where tickets are sold or persons get on the trains, notify the conductor of this, stating who the party is, giving the number of the ticket the party purchased, that they may be identified. Should no ticket be purchased, notify the conductor, giving him a description of the party. Conductors will notify the Board of Health Inspectors on their trains of the information given them, and will also notify me by wire from first open telegraph station. Good judgment must be displayed by agents and conductors that no unnecessary hardship may be imposed on innocent persons. Agents will ask all suspicious persons if they are from Pensacola, and should they have been there within the time prescribed by the Boards of Health, you will refuse to sell tickets to all points that have quarantined, informing the persons that quarantine has been established against them.

This is for your private information. J. T. HARAHAN, Superintendent.

NEW ORLEANS, La., October 5, 1882.

Joseph Jones, M. D., President Board of Health:

Sir—I respectfully present this, my report for the month of September as Quarantine Physician, English Lookout, L. & N. R. R., Louisiana. Enclosed will be found a table showing number of trains inspected, passenger and freight, and number of persons detained in quarantine. I examined into the sanitary condition of the lake towns, and find that they have no local boards of health, under ordinary occasions, nor any quarantine regulations. The fœcal matter from the vaults is used as garden manure, and that every one is his own sanitarian.

At Biloxi there is constant and daily communication with Ship Island, by means of sailing boats, but they are not allowed to enter the quarantine grounds.

Special praise is due Officers Allen and Bohner for the faithful and conscientious manner in which they discharged the delicate duties required of them; also to Mr. Victor Ward, the United States Customhouse officer, for kind assistance in enabling us to board vessels. Very respectfully,

W. Rt MANDEVILLE, M. D., Quarantine Physician, English Lookout.

NEW ORLEANS, October 16, 1882.

To Joseph Jones, M. D., President Board of Health, State of Louisiana:

Dear Sir—I respectfully submit to you the following report of inspections of trains and passengers, made at English Lookout Quarantine Station, Louisiana. This is from October 1, 1882, up to and including October 16, 1882.

On Saturday evening, October 7, 1882, I detained six sailors at Lookout Station; they had been at Ship Island. On Monday, October 9, 1882, these sailors were released from quarantine, by order of the President of Board of Health. The following is the history of the case:

The American schooner Susan Scranton cleared from the port of Havana, on August 12, with water ballast, and clean bill of health. She arrived at Ship Island on the twenty-second day of September, was fumigated and detained there ten days; left Ship Island on the third of October for Pascagoula; on October 4, went to Scranton, Mississippi.

The following are the names of persons of the Susan Scranton who were detained at Lookout: Capt. H. Schriever, who had yellow fever in Havana, about twenty years ago. Mate: John M. Lococh had yellow fever in Tampico. Sailors—Lewis Evenson, Henry Grard, Thomas Peterson, Christian Jackson. None of sailors have had yellow fever.

There is a health officer stationed near Grand Bay, Miss., who examined all trains from Mobile, Ala. This is the form of certificate given to conductors:

FORM NO. 1.

I hereby certify that train No. ————, Conductor ————, from Mobile, Alabama, has complied with all rules and regulations of the Mississippi State Board of Health, relating to trains entering the State.

Station on Louisville and Nashville Railroad, near Grand Bay.

Date ——— 1882. J. C. COWAN, M. D., Health Officer.

The United States mails from Pensacola are fumigated at Pensacola Junction, before entering Mobile.

On the following pages you will find a complete list of freight and passenger trains inspected at English Lookout Quarantine Station, also time of arrival and names of conductors. The way bills of freight trains have been examined, so as to have nothing from infected districts escape.

I am, very respectfully, WM. RYAN, M. D. Quarantine Inspector, English Lookout, La.

SANITARY AND MEDICAL INSPECTION IN THE MISSISSIPPI VALLEY.

[Extract from the Proceedings Board of Health, July 13, 1882.]

THE BOARD OF HEALTH—REGULAR WEEKLY MEETING—THE HEALTH OF THE CITY GOOD—THE BOARD RESENT THE INTERMEDDLING OF THE OFFICERS OF THE NATIONAL BOARD OF HEALTH.

The regular weekly meeting of the State Board of Health was held last evening, Dr. Joseph Jones President, in the chair, and Drs. Formento, Faget, Von Gohren and Kells, and Messrs. Marks, Booth and Bosworth present.

Dr Jones called the attention of the Board to the remarkably healthy condition of the city for this season of the year, and to the almost total absence of any contagious or infectious diseases. During the week ending Saturday last, there were only 102 deaths in New Orleans from all causes, and during the last five days, ending Thursday evening, but forty-six deaths had occurred, two of which were from scarlatina, one from small-pox, and one from malarial fever. The steady high temperature which we have had of late, was conducive to health.

Dr, Jones stated that he held under personal inspection the house No. 98 Old Levee street, where Henry Forbes was first taken sick, and although there were fifteen persons in this and the adjoining house, six of whom were small children, not a single case of sickness had occurred among them to date, and all were in a perfectly healthy condition.

In regard to small-pox, Dr Jones said the Board and its officers had done everything in their power to prevent the spread of that disease, and regretted that vaccination was not made compulsory by law.

Reference was made to the quarantine and health laws passed at the recent session of the Legislature. The former was in substance the same law as that passed in 1855, with but slight change in the wording.

The act requiring that all inhabitable rooms should be provided with a water capacity of 200 gallons, Dr. Jones said was in the right direction, but this supply was insufficient.

A special report from Dr. Beret, Sanitary Inspector of the Fifth District, was read relative to the health of Algiers in connection with the overflow in the rear from the Live Oak crevasse, showing that as yet no serious effects had resulted therefrom.

A communication from Dr. Finney, Resident Physician at the Mississippi Quarantine Station, was read, showing that all the vessels there were in a clean and healthy condition.

Mr. Marks introduced the following resolution:

Whereas, the Memphis Board of Health has adopted a resolution to the effect that on and after the fifteenth inst., and until October 1, 1882, coffee, rice, sugar, molasses, spices, and all tropical fruits, etc., shall be prohibited from entering Memphis, coming from Southern ports, and this extraordinary and uncalled-for action (as far as New Orleans is interested), has been superinduced by the action of the National Board, in suspending its inspection service; and whereas, the city of New Orleans is entirely free from epidemic diseases of every kind, and in a state of health comparing favorably with any of the large cities of the Union; and whereas, the efforts of intimidation that are being made to terrify Congress into making appropriations for the support of the National Board, by declaring non-intercourse with this city, or through the appeal of the Secretary of the National Board to the trusty shotgun, should not assume the dangerous form of the unneeessary destruction of commerce; be it therefore

Resolved, That the State Board of Health of Louisiana views with regret and astonishment the action of the Board of Health of Memphis, and respectfully requests that so far as this city is concerned this action be reconsidered.

Mr. Marks said that if this action by the Memphis Board was to protect the people of that city from the introduction of any contagious or infectious disease, why was it that such articles of commerce as were excluded from New Orleans, after being subjected to thorough disinfection and a detention of ten days at the quarantine station, were received from New York with only one day's detention at the quarantine station there?

The resolution was unanimously adopted and the Secretary instructed to forward a copy to the Memphis Board of Health.

Mr. Booth introduced the following resolution:

Whereas, an effort is being made to have it appear that the health of the people of New Orleans, of Louisiana and of the Mississippi Valley is being jeopardized by the Congress of the United States in refusing to continue the appropriation for the salaries of the official staff of the National Board of Health; and whereas, Dr. J. T. Turner, Secretary of said National Board of Health has caused to be circulated (it is to be supposed), by order of said Board, a scandalous telegram, as below, to say:

MEMPHIS, July 9.—Dr. R. W. Mitchell, resident member of the National Board of Health. this morning received the following telegram from Dr. J, T. Turner, Secretary of the National Board of Health at Washington:

"Give notice to all concerned to be prepared to close inspections on the fifteenth inst., and get all government property ready to place out of commission. Notify the valley. This action is owing to Congress failing to make an appropriation, and in the event of an outbreak of fever along the coast, remands the residents of the Mississippi Valley to such protection as can be given by the State and local boards of health and the trusty shotgun,"

This alleged notification, as aforesaid, intended as a libel upon this and other State Boards of Health, and, by thus defaming them, to bulldoze the Congress of the United States, into granting said National Board of Health their accustomed moneys and salaries; and

Whereas, said National Board of Health, by the emission of such innuendos and incendiary publications, violates the conventionalities of official interconrse in a gross and unwarrantable manner, showing what it would do if it once had power, and reflecting most aristocratically upon self-governing ability of the American people; therefore, be it

Resolved, That the telegram of Secretary Turner be copied and forwarded to President Cabell, of the National Board of Health, with a request that in future—if the board has any future—their communications to the people of the valley be couched in more decorous language when alluding to the board.

Resolved. That the State Board, supported by the confidence of the people, will continue its efforts, with aid from State, city and volunteers, to ward off the importation of foreign pestilence, and trusts that, with the help of a beneficent Providence guiding the skill and courage of man, the health of the valley may be preserved without recourse to the "trusty shotguu," recommended by the National Board of Health.

The resolution was adopted, when the board adjourned.

[Extracts from the proceedings of the Board of Health, State of Louisiana, regular meeting July 20, 1882.

The following communication from the President of the National Board of Health was read:

NATIONAL BOARD OF HEALTH,
UNIVERSITY OF VIRGINIA, July 17, 1882.

S. S Herrick, M. D., Secretary of Board of Health, New Orleans, La.:

Dear Sir—I have this minute received your communication of the fourteenth inst., transmitting a cop of resolutions offered by Mr. Booth, and adopted at a meeting of your board, held July 13.

In reply, I have to say that Dr. Turner sent no such telegram, as was falsely alleged in the Picayun of July 10. His message to Dr. Mitchell, which I have seen on the stub of the telegram book, closed wit the words "Notify the valley." The last sentence of the message ascribed to him, beginning with th words, "This action, etc.." and closing with the words "trusty shotgun," is apparently a comment adde by the person transmitting the message to New Orleans from Memphis.

I have seen the same message, in identical terms, printed in an Indianapolis newspaper, but there it printed correctly. The marks of quotation include only the part ending with the words, "Notify th valley." The added sentence is printed in a distinct type, without marks of quotation, as the commen of another person. The message to Indianapolis bears the same date (July 9) as that to New Orleans, a was evidently sent by the same party and at the same time I am constrained to infer that the alteratio was made in New Orleans. Very respectfully,

J. L. CABELL, President National Board of Health.

Mr. Marks indignantly denied that the dispatch had been changed or manipulated in the office of any journal in New Orleans, and he was sure this charge was unjust. The Secretary of the National Board of Health had not given any distinguished evi lence of his prudence and wisdom in writing letters about health matters in the Mississippi Valley.

A dispatch was read from Surgeon-General Hamilton, of the United States Marine Hospital Service, under date of July 17, to Dr. John Godfrey, at the Customhouse, in this city, empowering him to inspect vessels departing for ports up the river, on the request of masters of vessels, and directing him to refer the matter to the State Board of Health, which Dr. Godfrey had done, transmitting a copy of the dispatch from Surgeon-General Hamilton to the board.

Mr. Marks said in this connection: "It is a matter of great importance that wide publicity be given to this proffer on the part of our government, not only because the service will be faithfully performed, and without cost to the steamboat interest, but because, above all else, it will command the confidence of the people of the Mississippi Valley.

"The National Board of Health has created the impression that the costs of the inspection service on railroads and steamboats has been paid out of the appropriations of Congress, and in consequence of the failure of Congress at this session to make additional appropriations it threatened the dissolution of the service on the fifteenth of July, and would turn over this section of the country to the guardianship of the "trusty shotgun."

This deception was perfectly in keeping with the past history of the National Board. It is well known to the officers of that institution that the inspection service was not dependent upon congressional appropriations. It was within their full knowledge that railroads and steamboats had been required to pay the costs of inspection, and that inspectors upon railroads had been drawing salaries of $150 per month, paid by the railroads themselves.

"Why was this gross deception practiced upon the people? Why was a suspension of the inspection service threatened? The answer is simply this, because Congress required, in the opinion of the National Board officers, a certain amount of fright and intimidation.

"I trust that it will be generally made known that the inspection service is not, and has not been, contingent upon congressional aid or National Board deceptions."

Mr. Marks moved to adopt the offer of Surgeon-General Hamilton, and that the shipping inspector be directed to distribute copies of Dr. Godfrey's letter. Carried.

[Extracts from proceedings of the Board of Health, State of Louisiana, at regular meeting, July 27, 1882.

The Board of Health assembled at their rooms in the St. Louis Hotel building at seven o'clock on Thursday evening, with the President, Dr. Joseph Jones, in the chair, and Messrs. Booth and Marks and Drs. Formento, Faget, Kells and Von Gohren present.

The President made a verbal report of matters before the Board, in the course of which he stated that under the new law providing for quarantine fees from vessels visiting this port he did not think the income would be more than $20,000 for the year. In 1855 it had been $45,000, but the tendency of commerce in this day is to increase the capacity of vessels at the expense of their number, and hence a system of fees based on the number of such vessels showed a falling off.

He stated that all the cities of neighboring States had exhibited the utmost good feeling towards New Orleans, with perhaps the exception of Memphis and Vicksburg, but Memphis alone had made threats of quarantine Chicago, away off on the lakes, had also tried to create a public opinion against New Orleans, but that need scarcely be mentioned.

The relations of this city with St. Louis, Galveston, Mobile and other points were of the most satisfactory character.

The proposition from Surgeon General Hamilton, of the marine hospital service of the United States, to take charge of the inspection of vessels on the Mississippi river, he considered to be of the utmost importance, as it placed the inspection service in reliable and impartial hands. He had written to Surgeon General Hamilton conveying the high appreciation of the Board in the premises, and in view of the fact that Congress has made an appropriation for a marine hospital at this point he had ventured to suggest that it would be wise for the government to establish here a floating hospital in the river for the care and isolation of cases of yellow fever, small-pox and the like, occurring among sailors.

Mr. George Pandely came in and handed the President a dispatch just received from a correspondent in Galveston stating that a disease resembling yellow fever, but not yet pronounced on by the physicians, had made its appearance at Matamoras, Mexico. It was resolved to telegraph promptly to get the facts.

Mr. Booth arose to protest against expressions made in some of the public prints to the effect that the members of this Board were the creatures and minions of its President, and only acted at his dictation. He then offered the following:

Resolved, That this Board is in full accordance with its President, Dr. Joseph Jones, as to the administration of his office, and any attempt to single him out by name for animadversion, or to separate him from his fellow members as though they were opposed to, him but were somehow controlled to his support. falls far short of its intended object, and can only expose the animus of whoever, for their own reasons unfriendly to the Board, would thus seek to divide and conquer.

After a failure to lay on the table, the resolution was passed.

Mr. Marks arose to a question of privilege to defend himself against statements made in the Times-Democrat of last Sunday. He read from that journal a communication from Dr. S. E. Chaillé, of the National Board of Health, and also editorial remarks thereon, reflecting, as he thought, on himself. Mr. Marks said:

The communication, comment and publication arises out of statements made by me at the last meeting of the Board of Health.

The statements made that the railroad companies were paying the salaries of the inspectors were correct, and I had high railroad authority for making them. This I will show before I get through.

Such being the case, why was the Memphis Board of Health, immediately under the supervision of the National Board of Health Inspector, permitted to lay an embargo upon the commerce of New Orleans, assigning as its reason the discontinuance of the inspection service on the fifteenth of July. Knowing, as they did, that the inspection service was to be continued, and at the cost of the railroad companies, they deliberately deceived the public, and did this solely with the view of advising Congress of the terrible danger the clean city of Memphis would be exposed to, in the event of the suspension of the *pro forma* railroad inspection service.

But let me review Dr. Chaillé's statement, and endeavor to get at the true inwardness of it.

He states that "during the year 1881 the total amount expended on the inspection service, under my control and for the benefit of New Orleans, was $6372 80." As but $440 was paid by the railroad, and nothing by river craft, the public would like to know in what manner the balance of the amount was expended in the inspection service. For this purpose I proposed to respectfully request the Supervising Inspector to reply to the following interrogatories:

1. When did the inspection service commence on the Chicago and St. Louis Railroad and on the Louisville and Nashville Road in 1882? How long did it continue? How much did these roads pay? How much was paid by the National Board?

2. Have there been any inspectors on the Morgan Texas Road in 1881 and in 1882? If not, why not? If there has been any inspection on this road in either year, by whom was it paid, and what amount?

3. How much did the steamboat inspection service cost in 1881 and 1882, and by whom paid?

4. How much has been paid out of the inspection service fund in 1881 and 1882 for the expenses of the Ship Island Quarantine Station?

5. How much has been paid out of the inspection service fund in 1881 and 1882 for the running and maintenance of the steam launch Day Dream?

6. How much has been paid out of the inspection service fund in 1881 and 1882, for the following items, viz.:

The salary of Dr. Patton, at the Mississippi Quarantine Station.

The salary of the Supervising Inspector.

The salary or emoluments of the resident member of the National Board.

7. Does this inspection service fund contribute to any expense incurred outside of this State? If so, what amount, and where?

8. State any other items, charged to this fund.

The object of these inquiries is to ascertain how much is actually paid the inspection service at this point; not how much is charged up to this item. When this information is furnished we shall be partially informed of the true inwardness of the workings of the so-called inspection service.

While waiting for this, I will throw some additional light upon the subject. When I found that the statement I had submitted, on good railroad authority, had been questioned, and that there was a determination to maintain the false impression that has been created, that the railroad inspections had been paid for by the National Board of Health, and were contingent upon additional congressional appropriations, I addressed communications to two of the railroad companies, to which I received prompt replies.

The Chicago and St. Louis Road writes as follows:

NEW ORLEANS, July 24, 1882.

I. N. Marks, Esq., Member State Board of Health, 33 Camp street, New Orleans:

Dear Sir—In the absence of Mr. Clark, I beg to acknowledge receipt of your favor of this date, as to cost of National Board of Health inspection service to this company. I would say, in reply, that we paid in 1881 $220 for such service, and have agreed to pay at the rate of $150 per month during its continuance the current year, commencing July 1. Respectfully, T. E. KING,
Secretary, for President.

The $220 paid in 1881 was for inspection service from August 17 to September 30, about seven weeks.

The inspection service of this year commenced on July 1, fifteen days before the Memphis quarantine.

Subsequently to receiving this letter, I learned from an officer of the company that in 1880 this railroad paid $4380 for this service.

The Louisville and Nashville Road writes as follows:

NEW ORLEANS, July 25, 1882,

"I, N. Marks, Esq., New Orleans, La-:

"*Dear Sir*—Yours of the twenty-fourth received this a. m. In reply, will say that during the year 1881 this company paid $225 to the National Board of Health for an inspector for this road. We have also agreed to pay $150 per month, commencing with the first of July, this year, and to be paid as long as the inspector is kept on. "Hoping this information will be all you need, I am, yours truly,
"J. T. HARAHAN, Superintendent."

Is it necessary to comment upon this extraordinary development? Is it not about time that the *false public opinion*, which has been instigated and engineered by the paid agents of the National Board, should be dissipated, and that a just and proper appreciation of its workings be manifested by all of the public press and people?

Should it not be declared that, when Memphis establishes an antediluvian quarantine that the N. B. engineer is on duty?

That when the Illinois council is sending forth its fulminations, that the salary of the engineer has been doubled?

That when Jackson and Vicksburg and Little Rock cry out for additional aid for the National Board, that the shrill cry of the appropriation steam whistle speeds the ubiquitary pretense of the same engineer?

Thus the whole of this so-called public opinion emanates from the paid agents of this institution.

This board can confidently and securely rest upon the true public opinion of this community, as recently manifested in the strong endorsement of it by the Chamber of Commerce and the Produce Exchange, and in the good opinion of all surrounding communities not manipulated by or tampered with by the salaried agents of the National Board,

And in full accord with and supported by the Governor of Louisiana, and executing in good faith the laws of the State, it can afford to permit all the pigmy attempts of its opponents to defame it, or to weaken public opinion in its support, to proceed *ad libitum*.

The board went into executive session and adjourned,

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, July 19, 1882.

To Surgeon-General Hamilton, United States Marine Hospital Service, Washington, D. C.:

The welfare of the country will be promoted if the Inspection Service of the Mississippi Valley, and throughout the United States should be confided to your department, which has facilities for the proper treatment and isolation of infectious and contagious diseases.

New Orleans is in good sanitary condition, and absolutely free from yellow fever. Annual death-rate per 1000 white inhabitants, 20.3. * * * *

JOSEPH JONES, M. D., President Board of Health, State of Louisiana.

[Telegram.]

TREASURY DEPARTMENT,
OFFICE SUPERVISING SURGEON-GENERAL, U. S. MARINE HOSPITAL SERVICE,
Washington, July 20, 1883.

To Joseph Jones, M. D. President State Board of Health of Louisiana, New Orleans:

Sir—I have the honor to acknowledge the receipt of the dispatch of this date, and to enclose you a copy of an order this day sent Dr. Godfrey, the medical officer in charge of this service at the port of New Orleans.

In this connection, you are informed that a copy of your dispatch has been forwarded by the Secretary of the Treasury to the Senate Committee on Appropriations, with the information that the facilities exist in the Marine Hospital Service for the proper inspection of vessels proceeding up-river from New Orleans, without any additional appropriation from Congress.

I have to further request that you will, at any time, suggest any method by which this service may aid the State Board of Health of Louisiana, so far as the treatment of sailors and persons employed on steam boats is concerned.

Very respectfully,

JOHN B. HAMILTON,
Surgeon-General, U. S. M. H. S.

TREASURY DEPARTMENT,
OFFICE SUPERVISING SURGEON-GENERAL, U. S. MARINE HOSPITAL SERVICE,
Washington, July 20, 1882.

P. A. Surgeon John Godfrey, U. S. Marine Hospital Service, New Orleans, La.:

Sir—I inclose for your information a copy of a dispatch this day received from Dr. Joseph Jones, President of the Board of Health of the State of Louisiana, and to inform you that the same has been laid before the Secretary of the Treasury, who directs that you inspect vessels leaving New Orleans for up river, on the request of the masters, and furnish a certificate of the result of the same without charge.

Dr. Jones has been informed of this action, and also that you will co-operate with him as far as is in your power.

Yours, very respectfully,

JOHN B. HAMILTON,
Surgeon-General, M. H. S.

U. S. MARINE HOSPITAL SERVICE,
DISTRICT OF THE GULF, PORT OF NEW ORLEANS,
Surgeon's Office, July 24, 1882.

To President Board of Health, State of Louisiana:

I have the honor to say that hereafter such up-river vessels as desire health inspection can have it done without cost, and obtain certificates of sanitary status of passengers and crew, if the masters thereof wil make application at my office in the Custom House. Assistant Surgeon Armstrong will inspect in person

Very respectfully,

JOHN GODFREY,
Past Assistant Surgeon, M. H. S.

CIRCULAR—THREATENED OR ACTUAL EPIDEMICS.

TREASURY DEPARTMENT,
OFFICE SUPERVISING SURGEON-GENERAL, UNITED STATES MARINE HOSTITAL SERVICE,
Washington, D. C., August 9, 1882.

To Medical Officers of the Marine Service and Officers of State and Municipal Boards of Health.

I am directed by the Secretary of the Treasury to inform you that Congress, at its last session, enacted that—

"The President of the United States is hereby authorized, in case of a threatened or actual epidemic, to use a sum not exceeding one hundred thousand dollars, out of any money in the Treasury not otherwise appropriated, in aid of State and local boards, or otherwise in his discretion, in preventing and suppressing the spread of the same."

He further directs me to inform you that the President has decided to employ this contingent appropriation through the agency of the Treasury Department, and that, in case of a threatened or actual epidemic, immediate action will be taken, upon application, from the Governor of a State addressed to the Secretary of the Treasury.

JOHN B. HAMILTON,
Supervising Surgeon General United States Marine Hospital Service.

MISSISSIPPI QUARANTINE STATION, 1882—REPORT OF J. F. FINNEY, M. D., RESIDENT PHYSICIAN, MISSISSIPPI QUARANTINE.

MISSISSIPPI RIVER QUARANTINE, LOUISIANA,
December 31, 1882.

To the Hon. President and Members Louisiana State Board of Health, New Orleans, La.:

Gentlemen—I respectfully submit this my report of this station for the year ending December 31, 1882. It is embraced in tabulated statements numbered one to four, whose headings indicate the nature of each.

In reference to these statements, I would call your special attention to the fact, as shown by number four, that there has not been at this station during the past year a case of yellow fever; notwithstanding the fact that one occurred in New Orleans as early as June, and which would have been developed here if at that time there had been a quarantine detention of ten days for vessels arriving from infected ports.

I fail to see the wisdom of or benefits to be derived from a quarantine detention of three days for a short while, and then increasing it to ten days for the remainder of the season.

If it is the intention of your honorable body to quarantine vessels from infected ports during the summer for a minimum period of ten days, I would suggest that you so proclaim it from the beginning.

Last September we were visited by a terrible cyclone which did considerable damage. The grounds were submerged by sea water for three days, the fencing and water closets blown down and much of the fencing and loose articles washed away, the painting on all the buildings was either washed off or discolored, and considerable plaster fell from the walls and ceilings. Since then, however, with the limited means at hand, I have managed to have the grounds and buildings thoroughly cleansed and disinfected, the latter being necessary on account of the number of drowned animals and decayed vegetable matter left by the subsiding waters, the fences repaired as far as possible and levees put in good condition, with the exception of fascining, which is very necessary, and the walls and ceiling replastered.

I have made the following estimate of the material and repairs needed and cost: Lumber, $105; barb wire and staples, $45; labor, $50; painting exterior of buildings, two coats in oil and whitewashing fences and outbuildings, $500. Total, $700. With this small outlay the buildings will be preserved and the station present a commendable appearance.

In conclusion, I would ask your honorable body to allow me the employment of a man as hospital steward, the same to be a competent druggist, to take charge of and care for the hospitals and their effects, compound medicines, and perform such other duties as may be required of him by the Resident Physician. Such an officer is essential for the proper management of this station.

Very respectfully, your obedient servant,

J. F. FINNEY, M. D., Resident Physician.

[No. 1.] VESSELS ARRIVED, 1882.

MONTHS.	Steamship.	Ships.	Barks.	Brigs.	Schooners.	TOTAL.
January	46	6	24	4	8	88
February	36	5	11	3	10	65
March	41	9	25	8	15	98
April	59	2	9	2	21	93
May	51	5	10	.....	14	80
June	30	2	12	3	17	64
July	24	2	5	2	9	42
August	45	3	5	.....	7	60
September	61	5	9	2	11	88
October	53	3	9	.....	7	72
November	74	4	14	2	11	105
December	95	7	27	2	12	143
Total	615	53	160	28	142	998

[No. 2.] COLLECTIONS, 1882.

MONTHS.	Tax Fee.	Fumigation.	Other,	TOTAL.
January	$1285 00	.....	.....	$1285 00
February	930 00	.....	.....	930 00
March	1372 50	.....	.....	1372 50
April	1012 50	.....	.....	1012 50
May	940 00	317 00	5 00	1262 00
June	737 50	408 00	5 00	1150 50
July	572 50	154 00	.....	726 50
August	1502 50	262 00	.....	1774 50
September	1870 00	512 00	5 00	2387 00
October	1522 50	537 00	.....	2059 50
November	2102 50	105 00	.....	2207 50
December	3139 00	.....	.....	3139 00
Total	$16986 50	$2305 00	$15 00	$19306 50

No. 3. VESSELS QUARANTINED, 1882

	Rio Janeiro.	Havana.	Vera Cruz.	Minatitlan.	Colon.	Tampico.	Martinique.	St. Iago de Cuba.	Brazos St. Iago.	Pernambuco.	St. Thomas.	St. Ana, Mexico.	Pensacola.	Corpus Christi.	Porto Rico	Bahia.	Total.
May	1	7	7	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16
June	3	9	6	.....	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22
July	..	6	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8
August	..	4	4	.....	2	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	12
September	2	5	3	1	3	.....	2	1	2	2	1	3	1	1	1	..	28
October	2	13	4	.....	2	1	2	.....	.....	.....	1	.....	.....	.....	.....	1	26
November	..	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5
Total	8	49	25	2	11	2	5	2	2	2	2	3	1	1	1	1	117

[No. 4] VESSELS ARRIVING WITH SICK ON BOARD, 1882.

DATE.	NAME.	FROM.	No. of days on passage.	No. of sick.	DISEASE.	Removed to hospital.	Died.	Post-mortem examination.	REMARKS.
May 8....	Sch. J.G. Whipple	Minatitlan	9	6	Mal. fever.	0	1	1	.....
June 21..	Sch. Tomas	Tampico..	5	4	Mal. fever.	0	1	1	.....
Sept. 3...	Sch. Laura Lewis	Brazos St. Jago.	8	2	Mal fever.	0	1	....	Chronic.
Sept. 29..	Sh. J.C. Robertson	Colon	18	3	Mal. fever.	0	0	....	Chronic.
Oct 4....	S.S. Prinz George	Martinique	8	4	Mal. fever.	0	0	....	Occurred while in quarantine.
Oct. 15...	S S. Explorer...	Vera Cruz.....	3	1	Mal. fever.	0	0	....	Chronic.
Nov. 16..	S. S. Alava	Cienfuegos.....	3	1	Mal. fever.	0	0	....	Died in New Orleans.

REPORT OF W. H. CARSON M. D., RESIDENT QUARANTINE PHYSICIAN, RIGOLETS STATION, FORT PIKE, LA., 1882.

To the Honorable, the President and Members of the Board of Health, State of Louisiana :

Gentlemen—I have the honor to report the following duty performed at the above named quarantine station, from the first of May to September 14, 1882 :

This station was promptty opened on the first of May last, by the Board of Health of the State of Louisiana, in compliance with the proclamation of His Excellency, S. D. McEnery, Governor of the State of Louisiana.

Every detail in the furnishing of the station was looked to, and the instructions given by the honorable President, Joseph Jones, M. D., fully attended to and carried out.

The station was thoroughly equipped as to its boarding and inspection appliances, and in every way prepared for any requirements incidental to a quarantine station.

The total number of vessels (in the great majority schooners) noted, undergoing boarding and inspection. amounted to (933) nine hundred and thirty-three.

During the period of inspection no case of sickness of any nature was observed, nor was there any other feature creating or requiring any concern or unusual attention.

I may here mention that, during the quarantine season, I was repeatedly notified and forewarned by telegram from President Jones of the approach of suspicious vessels.

However, none were discovered to be infected, and they were released after undergoing rigid inspection, fumigation, the other disinfective measures and ten days' detention, under daily observation.

The question in regard to quarantine fees, the difficulty and uncertainty of collection, still require due consideration and solution; my views, as expressed in my annual report of 1881, I yet entertain, and from subsequent experience know of no reason to change or modify them.

I again recall attention to the increased importance of the station, and its removal to some locality in the immediate neighboorhood of the railroad crossing of the Rigolets, so as to inspect and control communication both by rail and water.

Respectfully submitted,

W. H. CARSON, M. D., Quarantine Physician,
Rigolets Quarantine Station, Louisiana.

REPORT OF N. L. SIGUR, M. D., RESIDENT PHYSICIAN ATCHAFALAYA QUARANTINE STATION, LOUISIANA, 1882.

MORGAN CITY, January 19, 1882.

To the President and Members of the State Board of Health, New Orleans, La.:

Gentlemen—I have the honor to forward you my report for the operations at this station during the session of 1882.

It is meet that I should first speak of the overflow which, last year, afflicted this entire country, and of its influence here over the public health and navigation. I shall call your attention to the fact that, whilst the flood lasted, and even after its withdrawal, few deaths occurred from disease; these were chiefly the result of accidents, such as drowning. It was only two or three months afterward that sickness commenced to prevail; dysentery and malarial fevers became rife, and the death-rate among infants from malnutrition and intestinal derangements grew unusually large. Yellow fever, however, failed to put in its appearance, showing that something else besides the great revolutions of nature is requisite for its production.

I shall not mention the ravages perpetrated by the waters, nor the houses, cattle and even human beings that they have carried away. This, however interesting, would perhaps appear foreign to my subject. Suffice it, therefore, for me to state that owing to the removal of the Morgan wharf and the cessation of railroad travel, the steamships of the line did not visit this place before May 28. The return of schooners was even more retarded; the current proved, for many weeks after, too strong to be stemmed. In addition, their trade, which consisted for most part of timber and cross-ties, had suffered considerably. These had been washed away in great quantities. This accounts for the notable reduction in the number of steamships, schooners and passengers as compared with the preceding year.

In making a summary of all my weekly rolls, I find that, during the whole past season, one hundred and twenty-nine steamships, fifty-nine schooners and six thousand eight hundred and sixty-three passengers have come under my observation. Out of these ships, ten hailed from infected ports, two were from Vera Cruz, the others from Corpus Christi. I have dealt with them all, according as your instructions and circumstances required. Whenever they allowed me some margin, I always made it a point to be guided by expediency, and to comply with the spirit of the law, rather than with its letter. I must congratulate myself upon this course of conduct, since it has been my good fortune, so far, to give satisfaction to all without ceasing, at the same time, to preserve the public health.

I am, very respectfully, your obedeint servant,

N. L. SIGUR, M. D.,
Quarantine Officer, Atchafalaya Station, for 1882.

OUTLINE OF THE QUARANTINE OPERATIONS OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA FOR 1883. TRANSFER OF QUARANTINE STATION FROM FORT PIKE TO RABBIT ISLAND, EAST RIGOLETS, BY THE BOARD OF HEALTH OF THE STATE OF LOUISIANA.

By a rigid system of economy, and by husbanding the resources, the Board of Health was able in the month of April, 1883, to empower the President to erect the necessary buildings, wharfs and boat-house on Rabbit Island, and to transfer the Quarantine Station to this locality from Fort Pike.

The total expenditures by the Board of Health at the Rigolets Quurantine Station during the quarantine season of 1883, extending from 1 May, to 1 November, was $3762 64, whilst the receipts were only $238, 50.

In response to the request of the President, the Finance Committee, composed of Hon. I. N. Marks, Colonel A. W. Bosworth and Hon. Ed. Booth, visited and inspected the Louisiana Quarantine Station on Rabbit Island, and reported as follows:

To the Board of Health, State of Louisiana:

Gentlemen—The Finance Committee, in company with the President, have visited the quarantine station at the Rigolets.

They inspected the buildings recently erected, and find them well constructed and conveniently adapted for the purposes intended.

The new site at Rabbit Island (United States Government property) is far superior to the old one at Fort Pike, commanding, as it does, both the Rigolets, East Louisiana and the railroad. The money spent upon this work has been well expended.

I. N. MARKS, Chairman,
A. W. BOSWORTH,
ED. BOOTH.

NEW ORLEANS, June 14, 1883.

QUARANTINE.

OFFICE BOARD OF HEALTH,
New Orleans, April 18, 1883.

Captains and masters of vessels, shippers and ship agents, and all parties concerned, are hereby notified that, in accordance with official action of the Board of Health of the State of Louisiana, the quarantine station has been removed from Fort Pike to Rabbit Island, East Rigolets. After the first of May, 1883, vessels entering East and West Pearl Rivers and Rigolets will report at Louisiana Quarantine Station on Rabbit Island, East Rigolets.

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

QUARANTINE PROCLAMATION, BY SAMUEL DOUGLAS McENERY, GOVERNOR OF LOUISIANA.

EXECUTIVE DEPARTMENT, STATE OF LOUISIANA.

Whereas, On the eighth day of March, 1883, the Board of Health of the State of Louisiana did request the Governor of the State to issue his annual proclamation of quarantine, and did advise in regard to the terms and conditions of the same. Now, therefore, in accordance with law, and upon the recommendation of said Board of Health, I hereby issue my proclamation that quarantine take effect from and after the first day of May, 1883, with the following specifications:

All vessels, together with their crews, passengers and cargoes, arriving at the several quarantine stations of the State from the Mexican ports of Matamoras, Tampico, Tuxpan, Vera Cruz and Minatitlan, from all ports on the islands of Cuba, Hayti or San Domingo, Porto Rico and Jamaica, and from the Brazilian ports, Rio de Janeiro, Bahia and Pernambuco, to be detained ten full days, and the vessels and cargoes to undergo cleansing and disinfection.

Also, that vessels from other West Indian Islands and from ports along the Isthmus of Panama and the coast of South America as far south as Brazil be subjected to inspection and such cleansing, disinfection and detention as the Board of Health may direct; particular reference being had to the Islands of Barbadoes, St. Thomas, Martinique, Guade

oupe and Trinidad, and to the ports of Colon, Carthagena, Savanilla, Baranquilla, La Guayra, Georgetown, Cayenne and Paramaribo.

The quarantine officers at the several stations are specially charged and directed to enforce strictly the execution of this proclamation, and the Board of Health is requested to prosecute vigorously all violations of the same, or of the quarantine laws of the State.

Given under my hand and the seal of the State of Louisiana, at the city of Baton Rouge, this fourth day of April, 1883.

(Signed) S. D. McENERY.

[SEAL].

By the Governor.

OSCAR ARROYO, Assistant Secretary of State.

PROTECTION OF NEW ORLEANS FROM THE INTRODUCTION OF FOREIGN PESTILENCE, THROUGH EAST PEARL RIVER AND BY WAY OF PEARLINGTON, MISSISSIPPI.

In accordance with the formal resolution of the Board of Health, Dr. William H. Carson was appointed Quarantine Inspector at English Lookout, on the fifteenth of May, 1883:

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, May 14, 1883.

In accordance with the action of the Board of Health at the last regular meeting on the tenth of May, 1883, Dr. William Hunter Carson is appointed Quarantine Inspector at Lookout Station, Parish of Orleans, La., and will be respected and obeyed accordingly.

Dr. Carson will execute the following duties, in obedience to the direction and in accordance with the powers of the Board of Health, State of Louisiana:

1. Boarding and inspection of all vessels entering Lookout.
2. All vessels from infected ports must be directed to report to the Louisiana Quarantine Station, on Rabbit Island, Rigolets
3. Dr. Carson will report all violations of the Quarantine Laws of Louisiana to the President of the Board of Health. He will also communicate all facts of importance relating to vessels from infected ports included in the Governor's Proclamation, to Dr. Adams, resident quarantine officer at Rigolets.
4. Dr. Carson will report promptly to the President of the Board of Health the entrance of a vessel or vessels from an infected port into the waters of Mississippi.
5. Dr. Carson will also hold supervision over the railroad trains, and allow no passengers or baggage from an infected port to enter Louisiana.

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, May 14, 1883.

Capt. Ward, United States Customhouse, Lookout, La, :

Dear Sir—The bearer, Dr, William Hunter Carson, has been appointed Quarantine Inspector at Lookout Station, and I would respectfully request that you extend to him the same kind courtesy exhibited to the State health officer during the quarantine against Pensacola in 1882.

The object is to exclude foreign pestilence, and the quarantine service will be facilitated if the Custom-house officer would permit Dr. Carson to accompany him in his boat in boarding vessels.

Respectfully, your obedient servant, JOSEPH JONES, M. D.,
President Board of Health, State of Lonisiana.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, May 14, 1883.

. T. Harahan, Superintendent Louisville and Nashville Railroad :

Dear Sir—In order to perfect, as far as practicable, the quarantine system of Louisiana. and guard all the venues from the approach of foreign pestilence, the Board of Health have assigned the bearer, Dr. William Hunter Carson, to Point Lookout.

I respectfully request that the railroad, which you represent with so much ability, grant Dr. Carson, a ree pass between Mobile and New Orleans.

It may be necessary to order an investigation at any time, and at any point on your road.

Respectfully, your obedient servant, JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

[From Regular Monthly Meeting Board of Health, May 10, 1883].

Dr. Jones stated that he thought an officer should be placed at Lookout Station, as vessels from infected orts passed that station on their way to Pearlington. He thought the Board of Health of Louisiana should o-operate with the State of Mississippi in maintaining quarantine, and to that end communicated to the uthorities of the State of Mississippi that the Board of Health of Louisiana would permit infected vessels o come to Rabbit Island Station, and there be disinfected before proceeding to Pearlington.

The Board of Health having, by formal resolution, authorized the President to confer with the health thorities of Mississippi most nearly connected with the quarantine system of Louisiana, the following rrespondence will give the results of his visit and personal interview with the President and members of e Board of Health of Hancock county, Miss., on the sixteenth of May, 1883.

BAY ST. LOUIS, MISS., May 13, 1883.

S. S. Herrick, M. D., Secretary Louisiana State Board of Health:

Dear Doctor—Yours of the twelfth instant, informing me of action of your board, and that Dr Joseph Jones, President of the same, would visit the bay, etc., was received this morning. You will please state to Dr. Jones that I have called a meeting of our board for Wednesday next, sixteenth instant, and would be pleased if he could so time his visit as to be present. Time of meeting 7 o'clock p. m., at courthouse.

I will be pleased to meet Dr. Jones and confer with him in regard to the English Lookout Quarantine matter, and I hope that some mutual understanding can be arrived at, as I consider it the only way, successfully, to protect your city and Pearl River from infection by that channel, from any vessel which may endeavor to avoid quarantine elsewhere.

Will be pleased to meet you when you visit the bay.

Yours truly,

A. PARKER CHAMPLIN,
President Hancock County Board of Health.

COURTHOUSE, HANCOCK COUNTY, MISSISSIPPI,
BAY ST. LOUIS, May 16, 1883.

By the Board of Health of said County—

Resolved, That the propositions of Dr. Joseph Jones, President of the Louisiana State Board of Health be and the same are hereby adopted, as follows: "The Board of Health of Louisiana desires to co-operate with the Hancock County Board of Health, in the event of vessels coming from infected ports and entering the waters of East Pearl River, with the design of loading lumber at Pearlington; that they be requested to undergo inspection and disinfection at the Quarantine Station at East Rigolets. The object of this regulation would be to give security to New Orleans in her intercourse with Pearlington or any point along the Gulf coast in Hancock County." Provided there is no expense to vessel for such service.

A true copy.
[Signed]

J. A. MEAD,
Secretary Hancock County Board of Health.

The complete record of the labors of the Board of Health of the State of Louisiana in the operations which successfully excluded yellow fever from entering New Orleans from the Mississippi Gulf coast, would cover much more space than could be devoted to this section of the quarantine of 1883; the following official orders and correspondence will, however, illustrate the character of the operations of this branch of the service:

NEW ORLEANS, June 29. 1883.

Messrs. Poitevent & Favre, Pearlington, Miss.

Gentlemen—A communication from the President of the Hancock County Board of Health informs us that a vessel presumed to be infected is now lying at Ship Island, and is about to receive a cargo of lumber by means or lighters, from the Pearl River Mills At its meeting last night this Board agreed to co-operate with the Hancock County Board, through its officers at the Rigolets and English Lookout, and will, at the request of that Board, disinfect and cleanse any lighters which may have communicated with vessels from infected ports.

It is proper to add that this Board feels bound to use all the means in its power for the protection of our city and State from foreign infection, and that any laxity along the Mississippi coast or on Pearl River will compel us to observe special measures of self-protection in those directions.

Respectfully, your obedient servant,

JOSEPH JONES, M. D.,
President Board of Health.

NEW ORLEANS, June 29, 1883.

Dr. W. H. Carson, Quarantine Inspector, English Lookout:

Dear Sir—This Board has agreed to assist the Hancock (Miss.) County Board of Health in the cleansing and disinfection of vessels from infected ports, and particularly of lighters communicating with such vessels. You are therefore requested to perform this duty whenever required by these authorities. Dr. Adams will send you all the materials needed for this purpose—sulphur, copperas, carbolic acid, and two iron pots.

You are also requested to exercise the utmost vigilance with reference to all such vessels, both seagoing and lighters, especially as we have intelligence that there is now a vessel at Ship Island from an infected port, which has come for a cargo of lumber, to be received by lighters. This vessel has a case of yellow fever on board.

Respectfully,

JOSEPH JONES, M. D.,
President Board of Health.

NEW ORLEANS, July 2, 1883.

A. Parker Champlin, M. D., President Hancock County Board of Health, Bay St. Louis, Mississippi:

Dear Doctor—Enclosed please find copy of telegram from J. B. Hamilton, Surgeon General, United States Marine Hospital Service; also telegrams from the Board of Health of the State of Louisiana, addressed to Messrs. Poitevent & Favre, of Pearlington, Dr. Carson, Lookout Station; J. W. Adams, M. D., Quarantine Physician, Rabbit Island, Rigolet Station; also copy of letter of Messrs. Poitevent & Favre, of June:

Please furnish this Board with prompt information relating to occurrence of yellow fever in shipping.

We desire full and specific information in reference to the following points:

In whose charge is the quarantine at Ship Island?

Has the Mississippi State Board of Health any representative on Ship and Round Islands?

Who are the health officers or quarantine physicians at Pass Christian, Biloxi, Mississippi City, Ocean Springs and Pascagoula?

Have these places any efficient quarantine regulations?

In this emergency, when the coast of Mississippi is seriously threatened with an invasion of yellow fever, the Board of Health of the State of Louisiana desire to co-operate freely and efficiently with the Health authorities of Mississippi, for the exclusion of foreign pestilence.

Respectfully, your obedient servant,

JOSEPH JONES, M. D.,
President Board of Health

NEW ORLEANS, July 2, 1883.

Poitevent & Favre, Pearlington, Miss.:

Your letter of thirtieth received. If you allow your lighters to communicate with infected vessels and with vessels from infected ports, and refuse to conform to the agreement between the Louisiana and Hancock County Boards of Health of May 16, this Board of Health will institute quarantine against Pearlington. The following telegram has been sent to Drs. Carson and Adams: Norwegian bark Alma, with two cases of yellow fever, sent from Pascagoula to Ship Island on June 27. Inspect all vessels from Pascagoula and Ship Island; if they have communicated with any infected vessels, direct them to proceed to Rigolets Quarantine Station Investigate all facts as to the existence of yellow fever at Pascagoula or Ship Island, or any point on the coast of Mississippi. and report immediately to the Board of Health.

JOSEPH JONES, M. D.,
President Board of Health.

Dr. Adams, Rigolets Quarantine Station; Dr. Carson, Lookout Station, La.:

Norwegian bark Alma, sent from Pascagoula to Ship Island with two cases of yellow fever June 27. Inspect all vessels from Pascagoula and Ship Island; if they have communicated with any infected vessel, direct them to proceed to Rigolets Station. Investigate all facts as to the existence of yellow fever at Ship Island or Pascagoula or any point on the coast of Mississippi, and report immediatly to the Board of Health.

(Signed) JOSEPH JONES, M. D., President Board of Health.
EDWARD BOOTH.
I. N. MARKS.
G. K. PRATT, M. D.,
F. FORMENTO, M. D.

NEW ORLEANS, July 7, 1883.

Wm. H. Carson, M. D., Quarantine Inspector, English Lookout:

Sir—I have ordered Sanitary Officers Allen and Bohuer to report for duty at English Lookout, under the following instructions.

1. To aid Dr. Wm. H. Carson in the execution of the following labors ordered by the board.

(a). Fumigation of vessels.

(b). Inspection of all trains passing from Mississippi into Louisiana.

The inspectors should in order to avoid interrupting trains proceed on the out-bound train as far as necessary say to Pascagoula, Biloxi or Bay St. Louis, and return with the train bound for New Orleans and inspect the passengers.

(c). Where passengers have been subjected to proper quarantine detentions at the regular Quarantine stations and their baggage fumigated, they may be allowed to proceed to New Orleans at the discretion of the Quarantine Inspector: said discretion being exercised as to the efficiency of the quarantine and the actual state of health of the passengers.

(d.) The Board of Health of the State of Louisiana demand that the Inspector at English Lookout should exercise the utmost vigilance, and allow no passenger or seaman to enter the State of Louisiana who has left an infected port, in any vessel, whether infected or not, without having been subjected to quarantine.

(e.) Furnish this Board of Health with written weekly and if necessary daily reports: also telegraph at once every evasion of quarantine and every point of interest.

Respectfully,

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

ERECTION OF BUILDINGS, WHARF AND HOUSE AT ATCHAFALAYA QUARANTINE STATION BY THE BOARD OF HEALTH OF THE STATE OF LOUISIANA.

In accordance with the formal resolutions of the Board of Health, the President visited Morgan City, La. in company with the quarantine physician, Dr. J. H. P. Wise, inspected the quarantine grounds and decided upon the neecssary plans for quarantine buildings.

The said buildings were erected in accordance with the specifications, and, after being duly accepted by the President, were paid for by the Board of Health, as will be seen by the following receipt:

MORGAN CITY, La., May 5, 1883.

State Board of Health

To Drews' Planing Mill, Dr.

(Gus Drews, Proprietor.)

Building wharf and house at Atchafalaya Quarantine Station	$525 00
1 cistern	30 00
1 sign	4 00
1 flagstaff	3 00
	$562 00

(Signed) Paid.
GUS DREWS.

THE UNITED STATES HOSPITAL SERVICE INDORSED BY THE BOARD OF HEALTH OF THE STATE OF LOUISIANA—RESOLUTIONS BY HON. I. N. MARKS.

The Board of Health held a special meeting at their rooms, corner of Royal and St. Louis streets, on Thursday evening, April 19, at 7 o'clock, with the President, Dr. Joseph Jones, in the chair, and Messrs. Ellsworth, Booth, Faget, Formento, Marks, Pratt and Von Gohren present.

The President stated that the meeting had been called at the request of the Chairman of the Finance Committee.

Mr. Marks, chairman of the committee, stated that the object of the meeting was to bring before it a matter which was thought to be of sufficient importance to call the Board together. The Mississippi Valley Sanitary Council, in its late session at Jackson, had manifested a great desire, and had made strenuous efforts to secure possession, for the National Board of Health or some other body in alliance with it, of the sum of $100,000 appropriated by Congress, and now in the hands of the Secretary of the Treasury at Washington, to be used for the suppression of epidemic contagious diseases.

This Board, he said, was only interested in having the Mississippi Valley protected from the ravages of disease and as far as the handling of the Congressional appropriation is concerned, it was desired to see it placed in the care of those who will use it with due honesty and efficiency for the great objects to be attained. There is a service of the government which can be most safely and fitly intrusted with these important duties, and it was desirable that this Board should put itself on record as indorsing that service Therefore, he offered the following:

Whereas, the Congress of the United States, at its last session, placed at the disposal of the President the sum of $100,000, to be used under his direction for the suppression of epidemic contagious diseases; and

Whereas, it is of paramount importance, with a view to the protection of the sanitary condition of the country, that the munificent appropriation of Congress be disbursed, if the exigency arises, through that branch of the public service recognized for its age, experience, economy and practical utility, and through which the representatives of the people designed and intended it should be disseminated;

Be it therefore resolved, That the State Board of Health of Louisiana respectfully but earnestly request the President of the United States to place at the disposition of the Marine Hospital Service of the government the entire appropriation of Congress, in the event that its use should unfortunately become necessary.

Resolved, That the State Board of Health of Louisiana unequivocally indorse the Marine Hospital Service and points with pride and satisfaction to its good record last summer in Texas, to the liberal arrangement it made for the protection of Pensacola, and the practical experience and economical administration of its important functions.

Resolved, That the President of the United States can rest assured that the sentiments contained in these resolutions are a true reflex of the public opinion of the people of Louisiana.

Resolved, That the President of this board transmit to his Excellency the President of the United States a copy of these resolutions.

They were unanimously adopted.

The President reported that on the thirteenth instant, he had received notice from Dr. Finney, quarantine officer at the Mississippi Station, that the three-masted schooner Ajax had passed the Quarantine Station without stopping for examination. The President has caused the captain to be arrested and the vessel to answer for the violation of the law. The captain, Northrup, and the agents, Messrs. A. K. Miller & Co., appeared, and the captain made oath that he had never before entered the Mississippi River, but had sailed up to Port Eads on the twelveth instant, and had signaled for a pilot and towboat, but getting none, and having a fair wind, he sailed up the river to a point within twenty-five miles of this city, when the wind changed and he came to anchor. He passed the Quarantine Station because he knew nothing about it, but knowing from the papers that the quarantine season did not begin until the first of May, he had no idea of violating any law or regulation of the State, his vessel having sailed direct from New York and touching at no point on the way.

The matter having been considered by the board, the fine in such case was remitted on the payment of the usual costs of court.

A letter from Dr. Wise, quarantine officer at the Atchafalaya Station, reports the construction of the new wharf and new buildings there as progressing favorably. Like reports were received from the work on the improvements at the East Rigolets Station.

The President reported that in obedience to a resolution of the Board, in company with Dr. Former and Mr. Booth, he had called on Mayor Behan, in reference to the need of the city for more sanitary police officers. The Mayor had received them courteously, and had placed at the disposal of the board sanitary policemen, who, with those already on duty, make up a total of twenty on inspection duty with the several District Inspectors.

After some general discussion, the board adjourned.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, April 20, 1882.

His Excellency Chester A. Arthur, President United States of America, Washington, D. C.:

Dear Sir—I have the honor to enclose resolutions unanimously adopted by the Board of Health of the State of Louisiana, at the regular meeting held April 19, 1883.

With great respect, your obedient servant,
JOSEPH JONES, M. D., President Board of Health, State of Louisiana.

TREASURY DEPARTMENT, OFFICE SUPERVISING SURGEON-GENERAL,
U. S. MARINE HOSPITAL SERVICE, WASHINGTON, May 24, 1883.

Joseph Jones, M. D. President State Board of Health of Louisiana, New Orleans, La.:

Dear Sir—I have the honor to acknowledge the receipt of the resolutions passed by the Board of Health of the State of Louisiana complimentary to this service, under date of April 19, 1883, and to respectfully tender you the thanks of the Bureau for the same. The courtesy shown this service by the Board would long ago have been acknowledged, but almost every day it was supposed that a decision would be made in the matter of the epidemic appropriation, which was the subject of the resolutions, and I am now happy to inform you that the disposition of the fund for the prevention of the spread of epidemic diseases has been placed in the direction indicated by your Board.

Thanking you for the kindness and hearty support you have given this service, and on behalf of the service assuring you of its sympathy, I am,

Very respectfully, your obedient servant,
JOHN B. HAMILTON,
Surgeon-General, M. H.

The attention of His Excellency, Governor S. D, McEnery, and of the General Assembly of Louisiana was directed during the session of 1882 to the important subject of quarantine, and more especially to resistance to the quarantine laws of the State by C. A. Whitney, President of the New Orleans Auxiliary Sanitary Association, representing Morgan's Louisiana and Texas Railroad Company, and by certain other ship-owners, shippers, and ship agents and brokers.

TABLE A.

Vital, Nosological and Mortuary Statistics of the Charity Hospital of New Orleans, embracing Total Admissions and Discharges and Deaths, also Admissions and Deaths of the more important and prevalent Diseases, during a Period of 18 years preceding the American Civil War, and a Period of 16 years following the American Civil War, namely: 1842–1860: 1864–1880: the Total Period embraced in the Tables is 34 years. The Materials for the Table have been collected from all available sources, and have been Classified and Consolidated by Joseph Jones, M. D., of New Orleans, Louisiana. New Orleans, 156 Washington street, Fourth District, January 1, 1882.

Year	Total Admissions	Discharges	Deaths	Remaining	Natives Foreign Countries	Natives United States
1842	4,404	3,516	760	.....	3,449	955
1843	5,013	3,672	1,041	420	3,921	1,092
1844	5,840	5,020	820	465	4,530	1,316
1845	6,136	5,446	563	401	4,786	1,350
1846	8,044	7,074	855	501	6,271	1,773
1848	11,945	10,010	1,897	828	10,366	1,579
1849	15,558	12,133	2,741	719	13,776	1,782
1850	18,476	15,929	1,884	.....	16,702	1,774
1851	18,319	17,047	1,869	.....	16,094	1,465
1852	18,031	15,057	2,098	980	16,322	1,709
1853	13,759	10,733	3,164	.....	12,153	1,306
1854	13,192	9,970	2,702	.....	11,690	1,502
1855	12,192	9,701	2,391	545	10,904	1,288
1856	9,432	8,398	974	.....	8,063	1,369
1857	8,903	7,913	1,017	572	7,326	1,577
1858	11,337	8,923	2,290	644	9,586	1,751
1859	12,775	11,257	1,321	730	10,761	2,014
1860	14,000	12,357	1,390	891	11,728	2,272
Total 18 Years	207,356	174,261	29,614	.....	.....	.....
Per cent of Deaths	14.2					
1864	4,861	3,999	812	423	2,970	1,891
1866	9,329	8,108	1,122	738	6,935	2,394
1867	8,612	7,260	1,438	637	6,512	2,100
1868	4,981	4,365	490	640	3,444	1,538
1869	6,177	5,327	784	716	3,449	2,678
1870	7,837	6,764	1,118	672	4,951	2,886
1871	6,651	5,750	891	700	1,133	2,518
1872	5,341	4,846	825	570	3,288	2,223
1873	5,490	4,124	983	543	3,055	2,035
1874	5,231	4,300	869	554	3,030	2,201
1875	4,845	4,121	754	525	2,646	2,180
1876	5,690	4,780	742	693	2,889	2,691
1877	6,002	5,290	805	690	3,232	2,730
1878	5,878	4,615	1,420	.....	3,160	2,703
1879	5,218	4,290	693	585	2,636	2,612
1880	4,884	4,180	654	534	2,531	2,353
Total 16 Years	96,857	[illegible]	14,105	.....	.....	.....
Per cent of Deaths	14.5					
Total 34 Years	304,213	256,520	43,718	.....	.....	.....
Per cent of Deaths	14.3					

Disease	1842 Cases treated	1842 Deaths	1843 Cases treated	1843 Deaths	1844 Cases treated	1844 Deaths	1845 Cases treated	1845 Deaths	1846 Cases treated	1846 Deaths	1848 Cases treated	1848 Deaths	1849 Cases treated	1849 Deaths	1850 Cases treated	1850 Deaths	1851 Cases treated	1851 Deaths
GENERAL DISEASES.																		
Yellow Fever	425	211	1,696	487	160	83	1		140	90	1,234	420	1,062	545	10	4	7	2
Typhus Fever			30	10							2,155	344	1,099	224	1,049	155	1,462	278
Typhoid Fever	35	15			142	58	154	50	192	70					208	34	271	66
Dengue Fever											9				1		2	
Nervous Fever	3	2	2	1			12		3						4	2	1	1
Adynamic or Ataxic Fever	1	1	1						1									
Ephemeral Fever											92		80		90		62	
Continued Fever					10	2					0	1	21	1	105	6	104	4
Catarrhal Fever	3		1						2		13				47			
Gastric Fever	10		15	1	12	2												
Malarial Paroxysmal or Paludal Fevers: Remittent Fever	179	4	277	12	307	12	170	5	115	5	667	14	963	10	2,380	20	2,456	17
Intermittent Fever	1,121	2	823		1,591	6	1,407	3	1,905	2	2,302		4,443		7,880		6,955	5
Congestive Fever	50	24	32	14	131	58	21		42	22	56	31	30	30	55	43	93	48
Pernicious and Malignant Fever							5	3	27	14			1	1	47	39	38	20
Malarial Fever																		
" Poisoning																		
" Cachexia																		
Typho-Malarial Fever																		
Other Fevers			6	1	10				6				6	5	1	1	4	
Eruptive Fevers: Small Pox	60	10	68	10	10	2			1		31		92	28	35	6	47	8
Measles	7				3				18	1	6				1		1	
Scarlet Fever	1				2		2		0	1	6	2	2		4		2	
Diphtheria																		
Cholera (Malignant or Asiatic)											602	306	1,813	1,122	724	530	382	292
Cholera Morbus	7	2	9	1	3	1			3						3		4	
Cholera Infantum	1										1	1			2	2	2	2
Erysipelas	27	8	53	10	64	7			34	3	50	20	48	9	25	4	57	9
Puerperal Fever											1	1	6	5	5	5	1	1
Rheumatism	220		241		270	1	340		615		338	3	380	4	408	3	363	
Syphilis	137	1	140	2	227		320	4	302	3	206	2	304	4	439	5	408	
Phthisis Pulmonalis	97	78	104	87	140	110	165	107	230	153	208	150	303	184	382	219	412	238
Tabes Mesenterica													2	1	4	4	4	4
Scurvy	15	1	8		16	2			24	4	9		14	3	21		9	2
Scrofula	1		4		4				10		9		17	1	8	1	21	2
Cancer									10	6	2	1	7	4	2		10	6
Leprosy (Elephantiasis Græcorum)	4	1			3								1	1	2	1	1	
Yaws																		
Diabetes	1		1	1	3	1			1		1				1			
Anæmia	1	1	5	5	11	4			23		150	7	20	4	32	13	32	13
Anasarca (General Dropsy)	83	28	114	20	35	7			60	25	35	4	6		18	8	78	20
LOCAL DISEASES. Diseases of the Nervous System.																		
Congestion of the Brain			9	7	20	17			45	20	35	21	16	10	16	15	19	15
Abscess " "																		
Cerebritis and Encephalitis	7	7	22	14	18	7			5	5	15	12	14	9	9	8	8	8
Phrenitis	2	1									1	1	4	2	2	2	1	
Meningitis	1	1	1	1	3						1	1	3	2	1	1	10	5
Cerebro Spinal Meningitis									3	3					1		4	3
Softening of the Brain					1	1			4	3	8	5	2	2	7	6	3	3
Apoplexy	4	3			4	4			7	5	8	6	7	5	9	9	24	20
Sun-Stroke (Insolation)	4	2					27	17	2	1	10	4	10	2	66	32	29	16
Paralysis	11	1	18	1	16	4			6		10	2	11	1	14	4	30	3
Hæmeplegia	3	1							1		8	2	4	1	3		6	
Paraplegia			6	1					0	2	9	3	1		7	1	1	
Tetanus: Unclassified	4	4	2	1	6	5			0	2					4	1	7	5
Tetanus: Idiopathic											1	1						
Tetanus: Traumatic											12	7	11	9	14	11	8	7
Trismus Nascentium													1	1	4	4	3	2
Convulsions									2		3	3	4		4	3	10	5
Epilepsy	9	3	10	6	12	2			14	4	12	2	15	5	19	6	12	5
Delirium Tremens (Mania a Potu, Alcoholism)	192	20	81	21	123	18	115	81	[illegible]	60	185	17	233	42	190	52	216	62
Intemperance			23						24		52	5	84		48		44	1
Insanity			48	5	5						2		2				15	
Dementia and Idiocy									2		6		2		9		6	
Neuralgia	6				10	1			52		20		17		15		19	
Diseases of the Circulatory System.																		
Pericarditis	5	4	3		6	1			3	3	13	2	14	2	10	7	3	
Carditis and Endo-Carditis	2	1	1		2	1			8		6				13	3	9	2
Heart Clot																		
Hydro-Pericarditis									1	1	21	1	1					
Hypertrophy of Heart	5	4	2	2	10	2			14	7					25	14		
Fatty Degeneration of Heart																		
Mitral Regurgitation and Obstruction																		
Tricuspid Obstruction																		
Aortic Obstruction and Regurgitation																		
Aneurism	1				3						3		9	3	1	1		
Heart Disease (Unclassified)	1	1							1		21	7	23	9	6		50	21
Diseases of the Respiratory System.																		
Pneumonia	80	28	100	30	119	35	64	10	70	20	74	20	57	15	90	32	80	31
Pleurisy	55	5	60	4	50	2	42	6	71	8	44	2	76	6	58	5	61	5
Hydro-Thorax	3	3	5	5	2				2	2	8		5	4	1		4	2
Pneumo Thorax											2							
Hydro-Pneumo Thorax									1		2				1	1	1	1
Abscess of Lungs																		
Gangrene of Lungs									7	7	1		1	1	1	1	4	4
Catarrh	41		11		40	11	71	4	18		40		58		47		47	
Influenza			40		10	6							2					
Laryngitis	15	1	17	6	19	2			10	4	19	4	19	3	8		8	
Bronchitis	80	3	111	1	125	13	150	11	200	7	183	6	176	4	132	7	170	7
Diseases of the Digestive System.																		
Diarrhœa	108	26	153	13	173	24	259	30	290	60	430	64	1,386	131	907	183	872	141
Dysentery	232	101	231	110	404	108	279	60	473	130	421	168	320	117	426	162	601	213
Constipation	8		3		13				18		75		58		63		42	
Colic	30		19		16		18		18		3		27		66	1	20	2
Colica Pictonum (Painters-Colic)	14				15		21		14		47		40	1	84	1	72	
Gastritis	69	8	133	6	100	7			92		105	2	84	1	93	1	66	9
Peritonitis	15	6	2	1	9	4			9	7	10	5	11	6	11	6	8	8
Enteritis	71	27	38	5	71	26	72	9	77	10	68	14	60	14	21	2	99	12
Gastro-Enteritis	64	21	66	26	68	15	73	20	80	20	39	19	50	21	34	19	36	9
Gastro-Duodenitis	10	5			20	10			12						1		1	
Hepatitis	16	10	15	7	35	3			23	10	38	9	31	11	37	8	60	26
Abscess of the Liver									5	5	4	4	3	2	3	3	4	4
Cirrhosis of the Liver									2	2	2	1			1	1	2	2
Jaundice (Icterus)	27	2	50	7	32	2			27	3	29	3	36	3	33	6	27	7
Ascites					60	27	33	12			56	32	67	29	64	38	38	13
Hernia	10	1	12	1	11	1			7	2	15	3	9		14	1	9	1
Diseases of the Urinary and Generative Organs.																		
Nephritis	1				3	1							3		6	1	4	
Albumenuria																		
Bright's Disease											1		9	2	8	4	6	3
Gravel and Calculus	1								1	1			2		3		2	
Hæmaturia					4				1		3		1		2	1		
Gonorrhœa	46		61				87		166		49		70		50		127	2
Orchitis	13	1	23	2	21				26		17		26		11		33	
Cystitis	4		3	2	5				2		10	2	7	2	4	2	5	1
Cellular and Cutaneous System.																		
Elephantiasis			2						2				2	2	1		1	
Psoriasis									7		6		7		2		6	
General and Local Injuries, Etc.																		
Ulcers	230	1	171		270	2	347	1	468		403		385	4	500	1	402	1
Abscess	39	3	51	4	57	1	41		90	5	127		154	2	157	3	123	3
Burns	10	1	9	5	10				15	3	27	2	24	1	29	3	24	1
Scalds	22	4	9		27	2			20		9		38	6	27	9	45	
Fracture	52	9	67	6	60	3	73	15	108	8	90	7	101	14	100	3	102	7
Contusion	131	2	141	1	202	2	195	6	455		186	2	232		223	2	285	2
Luxation			11						4	1	14		18		27		19	
Wounds	67	4	74	8	88	3	111	3	121	1	113	3	146	2	115	5	124	13
Fistula, including Fistula in Ano	5		14	1	15	1			20		21		26		6		17	
Frost Bite									2									
Ptyalism					15				9	2	15						19	
All other Diseases	121			10	154		1,367	163	654	32	241	11	502	40	486	78	731	112
TOTAL	4,404	760	5,013	1,041	5,846	820	6,136	563	8,044	855	11,945	1,897	15,558	2,741	18,476	1,884	18,319	1,869

Disease	1852 Cases treated	1852 Deaths	1853 Cases treated	1853 Deaths	1854 Cases treated	1854 Deaths	1855 Cases treated	1855 Deaths	1856 Cases treated	1856 Deaths	1857 Cases treated	1857 Deaths	1858 Cases treated	1858 Deaths	1859 Cases treated	1859 Deaths	1860 Cases treated	1860 Deaths	Total 18 Years Cases treated	Total 18 Years Deaths	Per cent of Deaths
GENERAL DISEASES.																					
Yellow Fever	49	339	3,317	1,690	2,743	1,233	2,198	1,099	98	51	235	155	2,727	1,382	107	84	2		16,073	8,081	50.2
Typhus Fever	1,009	150	241	59	52	18	54	29	27	11	9	2	8	5	22	10	3		7,220	1,301	18.0
Typhoid Fever	509	106	219	63	237	73	297	103	155	56	154	84	134	53	298	99	148	74	3,144	983	31.2
Dengue Fever	1																468		481		
Nervous Fever	2				23	7	7	3											50	13	26.0
Adynamic or Ataxic Fever									16		1								27	4	14.8
Ephemeral Fever	49		75		73		11						9		7		12		560		
Continued Fever	471	48	78	3	39		19		15	1	38	2	37	2	32	3	45	2	1,020	75	7.3
Catarrhal Fever					20		11												97		
Gastric Fever					74														111	3	2.7
Remittent Fever	1,852	40	480	16	701	18	430	14	329	3	220	5	265	2	707	38	702	16	13,157	266	2.0
Intermittent Fever	5,447		2,035	6	2,162	1	2,162		2,070	1	1,721	1	1,899	5	3,707	5	3,249	6	53,729	54	0.01
Congestive Fever	205	107	23	18	13	8	5		75	13					74	37	38	27	952	485	50.9
Pernicious and Malignant Fever			30	20	29	2	31	18	30	21	18	16	16	9	26	24	38	2	346	221	63.8
Malarial Fever																					
" Poisoning																					
" Cachexia																					
Typho-Malarial Fever															5	1			5	1	20.0
Other Fevers	7	2	5	2	47		18		6	3	2		1		1	1			120	15	12.5
Small Pox	40	4	13		10	1	26	1	5		23		22	1	5		5		502	83	16.5
Measles	19	1	35	1	13		6	1	26	2	55	6	7		15		21	1	233	13	5.5
Scarlet Fever	8		8	2	13	4	16	7	4	1	4	1	10	2	18	4	16	5	125	29	23.2
Diphtheria															5		10	1	15	1	6.6
Cholera (Malignant or Asiatic)	485	358	194	115	478	352	351	225	32	11	1	1							5,122	3,402	66.4
Cholera Morbus	8	1	13	4	15		10				24	8	19	9	14	8	15	3	147	37	25.1
Cholera Infantum	3	3	4	2	6	6	9	5	9	7	3	3	8	7					48	38	79.1
Erysipelas	63	8	58	5	25	1	38	6	58	3	42	3	59	7	57	6	58	9	795	124	15.6
Puerperal Fever	9	5	2	2			2	3	5	2	1	1			1	1			33	24	72.7
Rheumatism	522	1	474	2	431	3	420	7	465	3	484	3	460	3	579	3	589	9	7,526	40	0.5
Syphilis	463	1	456	10	472	5	429	5	536	5	440	4	314	4	513	6	556	4	6,767	63	0.9
Phthisis Pulmonalis	474	209	354	189	359	208	324	194	353	165	370	164	366	164	412	251	431	195	5,699	3,084	54.1
Tabes Mesenterica	1	1	3	3	4	2	5	5	4	3	5	2	5	2	2	2			39	29	74.3
Scurvy	14	2	70	1	13	4	46	4	24		11	1	6	1	17	1	11	1	322	27	8.3
Scrofula	8		23	1	7	2	12	1	17	3	13	1	9	1	18	2	8	1	192	16	8.3
Cancer	11	5	10	8	6	2	14	4	20	9	31	3	24	6	17	7	16	5	186	66	35.4
Leprosy (Elephantiasis Græcorum)			1				3		3	1	2				2		4		26	4	15.3
Yaws																					
Diabetes							1	5	4		4				6	1	2		25	4	16.0
Anæmia	34	6	30	4	17	3	39	5	30	4	31	2	22	4	39	1	74	6	586	82	13.7
Anasarca (General Dropsy)	57	20	58	20	58	27	28	6	22	4	9	5	24	9	42	8	33	16	760	226	29.7
LOCAL DISEASES. Diseases of the Nervous System.																					
Congestion of the Brain	17	16	10	9	19	12	11	8	17	9	16	15	7	7	25	20	18	14	315	221	70.1
Abscess " "											1	1	1	1					2	2	100.0
Cerebritis and Encephalitis	3	2	6	3	3	3	2	1	16	7	6	2	1		7	5	2	2	144	95	65.9
Phrenitis	1	1			6		1	1											18	8	44.4
Meningitis	5	5	8	6	4	2	5	4	3	1	7	3	5	5	3	1	15	5	75	43	57.3
Cerebro Spinal Meningitis											2								44	33	75.0
Softening of the Brain	2	2	1		2	1	3	3	7	4			2	2	1	1	1		170	142	83.5
Apoplexy	16	14	9	7	16	16	19	18	13	10	11	5	7	7			16	13	346	170	49.1
Sun-Stroke (Insolation)	29	16	20	12	52	13	11	5	9	3	2	1	10	4	12	1	53	32	16	6	60.0
Paralysis	26	1	31	4	29	1	37	4	25	4	20	1	54	8	28	4	36	6	402	49	12.1
Hæmeplegia	12		3		13	3	8	2	7		12		9	1	9		6	2	101	12	11.5
Paraplegia	3		3		4	1	9	2	11	3	8	3	6	5			7	3	81	24	29.6
Tetanus: Unclassified	2	1	3	1	1	1	1	1											24	15	67.5
Tetanus: Idiopathic					3	2	1	1	2	2			2	2			1	1	22	14	63.6
Tetanus: Traumatic	9	9	8	3	6	5	4	1	8	7	9	8	8	5	10	8	9	9	116	92	79.3
Trismus Nascentium	2	2	4				1	1	2	2			2	1	1	1	1	1	17	15	88.2
Convulsions	2	2			6	5	5	7	3	2	4	1	6	3	8	5	14	4	72	39	54.1
Epilepsy	16	6	19	6	23	8	22	7	21	3	27	8	29	6	16	3	21	4	297	84	28.2
Delirium Tremens (Mania a Potu, Alcoholism)	216	50	183	54	218	61	136	40	224	61	192	42	192	55	254	56	255	80	3,290	783	23.7
Intemperance	78	7	88	7	145	7	62	2	84	2	75	6	138	6	153	8	345	32	1,443	62	5.6
Insanity	20	2	20		13		11		12		18		20		18	1	11		215	8	3.7
Dementia and Idiocy	0	1			1	1	5										1		38	2	5.2
Neuralgia	18		25		33		27		33	1	21		48		72		79		504	2	0.1
Diseases of the Circulatory System.																					
Pericarditis	9	3	5	1	4		4	1	7	3	5	1	4	3	4	2	2	1	107	31	31.7
Carditis and Endo-Carditis			1		6		2		3		4				2	2	4		60	8	13.3
Heart Clot																					
Hydro-Pericarditis					1				1	1	1	1							59	30	50.8
Hypertrophy of Heart					2		1	1											26	4	15.4
Fatty Degeneration of Heart																					
Mitral Regurgitation and Obstruction																					
Tricuspid Obstruction																					
Aortic Obstruction and Regurgitation																					
Aneurism	3	1	1		2	2	4	1	3				6	6	7	5	7	1	50	20	40.0
Heart Disease (Unclassified)	52	9	39	12	31	17	38	12	46	16	61	26	44	15	27	12	[illegible]	12	483	169	34.9
Diseases of the Respiratory System.																					
Pneumonia	126	40	108	37	140	29	147	37	125	35	162	50	121	43	164	59	[illegible]	112	2,075	684	32.8
Pleurisy	93	8	65	4	64	7	63	14	55	3	52	3	47	5	76	6	82	11	1,123	103	9.1
Hydro-Thorax	3		3	1	6		6	5	1	1			6	2					55	25	45.5
Pneumo Thorax			2	1			4	2											8	3	35.0
Hydro-Pneumo Thorax	2	1	1	1							1		1		3		6	4	19	9	47.3
Abscess of Lungs																					
Gangrene of Lungs	2	2	4	4	4	1	3	3	2	1	5	4	6	3	2	2	1	1	43	34	79.0
Catarrh	97	1	45	3	38	3	96	1	68		71	1	112	2	71	1	173	4	1,144	30	2.6
Influenza	8		12		6						19		21		9	1	11		147	7	4.7
Laryngitis	15	2	8		9		6		12	1	15	2	16	3	16	1	20		234	29	12.4
Bronchitis	373	17	231	12	184	15	207	8	104	15	211	14	129	4	215	8	213	19	3,359	171	5.1
Diseases of the Digestive System.																					
Diarrhœa	1,017	152	667	117	944	153	760	122	660	118	550	97	698	131	927	146	1,286	218	12,125	1,925	15.8
Dysentery	414	126	250	110	279	75	333	61	303	76	288	76	243	69	261	90	464	89	6,242	2,004	32.1
Constipation	67		77		60		46		60	1	58		44		32		91		805	1	0.1
Colic	80		51		27		30		34		17		16		36		28		534	3	0.5
Colica Pictonum (Painters-Colic)	70	1	50	2	47	1	60	5	41		36	1	25		38	2	3		718	15	2.7
Gastritis	60	7	91	4	97	4	60	4	34	3	38	5	58	1	113	11	92	3	1,454	82	5.6
Peritonitis	15	10	11	5	12	4	12	3	15	14	17	12	18	7	11	9	10	8	196	117	59.6
Enteritis	47	7	30	3	26	7	58	9	46	10	24	9	18	9	9	1	26	5	868	173	19.9
Gastro-Enteritis	12	5	9	4	19	5	18		17	10	21	14	16	3	10	6	16	4	657	230	35.0
Gastro-Duodenitis	2	1	2																58	21	36.2
Hepatitis	68	17	36	6	24	3	18	4	15	5	12	3	26	12	42	15	41	12	557	161	28.9
Abscess of the Liver	3	3	8	7	3	2			8	3	7	7	7	4	6	4	3	1	64	49	76.5
Cirrhosis of the Liver	6	6	7	6	8	5	12	8	2	2	10	6	10	8	7	5	25	14	94	66	70.2
Jaundice (Icterus)	97	10	27	1	18	2	33	3	34	2	36	6	36	7	33	6	34	5	549	75	13.6
Ascites	70	36	32	14	40	20	83	37	62	21	50	30	26	6	61	31	92	27	834	373	44.7
Hernia	11	1	16		9	1	13	2	17	1	18	2	26	2	28	1	41		275	20	7.2
Diseases of the Urinary and Generative Organs.																					
Nephritis	8		2		6	2			6		3	2	4		6	2	6		58	8	13.7
Albumenuria					3	1			14	6									84	40	47.6
Bright's Disease	14	6	5	2	2	2	10				17	7	15	7	7	7	23	15	51	27	52.9
Gravel and Calculus					1		3		1		1		1						25		
Hæmaturia	6		1		1		1												10	1	10.0
Gonorrhœa	138		112		18		41		69		84		72		125		110		1,435	2	0.1
Orchitis	30		36		1		31		27		27		18		44		29		413	3	0.7
Cystitis	3		7		3		6		8		9		9	2	4	1	8	1	97	13	13.4
Cellular and Cutaneous System.																					
Elephantiasis			1				1		2				3	1			2		17	3	17.6
Psoriasis	1		3		5		7		7		10	1	4		3		15		83	1	1.2
General and Local Injuries, Etc.																					
Ulcers	372	1	392		460		280	1	364		267		297	3	259	5	484	3	6,484	24	0.3
Abscess	167	3	104	1	113	1	105	3	88	2	69	2	95	3	127		167	5	1,874	42	2.2
Burns	34	6	35	6	33	3	36	8	47	3	40	4	54	7	38	9	82	11	547	73	13.3
Scalds	23	3	8	1	3		4		2	2	9		6	3	4		7	3	274	33	12.0
Fracture	132	4	119	9	100	5	136	7	121	15	142	11	138	16	157	12	164	77	1,962	227	11.5
Contusion	205	2	197		173	1	142	1	273		194		196		587	2	400	6	4,417	29	0.6
Luxation	18		19	1	26		26		25		31		22	1	20	1	28		308	4	1.3
Wounds	233	5	259	9	227	11	241	16	264	8	272	17	285	16	257	19	322	44	3,319	189	5.6
Fistula, including Fistula in Ano	12		21		26		20		15		28	1	22		16		26		305	2	0.6
Frost Bite							5				5		1		3		5		21		
Ptyalism	12		19	2	14		10				3		15		12		14		157	6	3.8
All other Diseases	1,109	39	2,155	208	1,111	195	1,5[illegible]3	161	1,320	87	1,515	63	1,362	84	1,461	111	1,584	47	17,359	1,471	8.4
TOTAL	18,031	2,098	13,759	3,164	13,192	2,702	12,192	2,391	9,432	974	8,903	1,017	11,337	2,290	12,775	1,321	14,000	1,390	207,356	29,614	14.2

Disease	1864 Cases treated	1864 Deaths	1866 Cases treated	1866 Deaths	1867 Cases treated	1867 Deaths	1868 Cases treated	1868 Deaths	1869 Cases treated	1869 Deaths	1870 Cases treated	1870 Deaths	Total 16 Years Cases treated	Total 16 Years Deaths	Per cent of Deaths	Total 34 Years Cases	Total 34 Years Deaths	Per cent of Deaths
GENERAL DISEASES.																		
Yellow Fever	2	1	130	93	1,493	672	8	5	4	1	518	262	3,160	1,568	49.6	19,233	9,667	50.2
Typhus Fever									1	1	1	1	2	2	100.0	7,222	1,303	18.0
Typhoid Fever	51	35	93	42	39	18	17	8	35	16	37	17	377	[illegible]	47.7	3,521	1,163	33.0
Dengue Fever			10		3								155			636		
Nervous Fever													1			51	13	25.4
Adynamic or Ataxic Fever																27	4	14.0
Ephemeral Fever											1		3			563		
Continued Fever			43	8	11	2			1		3		79	13	16.4	1,099	88	8.0
Catarrhal Fever													19	1	5.2	116	1	0.8
Gastric Fever																111	3	2.7
Remittent Fever	61	12	505	40	296	28	119		60	4	214	6	2,204	115	6.5	15,301	311	2.0
Intermittent Fever	1,049	2	2,807	11	2,225	13	995	5	1,461	7	1,723	7	[illegible]	75	0.3	71,670	129	0.1
Congestive Fever	21	20	40	29	58	48	13	11	47	34			266	214	80.4	1,218	690	57.3
Pernicious and Malignant Fever	3	3					8	2			9		132	99	75.0	178	320	66.9
Malarial Fever	188	28	173	58	298	31	410	11	297		341	60	6,231	636	10.1	6,231	636	10.1
" Poisoning													131	50	11.6	131	50	11.5
" Cachexia													[illegible]	7	7.7	95	8	8.4
Typho-Malarial Fever	17	5							5		5		[illegible]	66	50.4	147	66	47.2
Other Fevers			3	3	10				27	27	3	2	15	5	31.3	135	20	14.8
Small Pox	49		29	2	10		4		2		45		389	4	1.0	891	87	9.7
Measles	38	4	12	1					31	2	13		15	10	6.3	301	23	5.8
Scarlet Fever	2		5	1			2						17	8	47.0	142	37	26.0
Diphtheria	7	6	4		2		1	1	1	1	6	2	28	13	46.4	43	14	32.5
Cholera (Malignant or Asiatic)			300	237	94	70	15	9					383	343	77.4	5,505	3,745	67.3
Cholera Morbus	3	1	26	1	13	1	12	1	13	3	4	4	62	20	21.9	209	60	21.6
Cholera Infantum	4	3	2	2	1	1							12	9	75.0	60	47	78.3
Erysipelas	35	4	39	1	27	2	5		20	1	43	1	437	48	10.5	1,232	172	13.9
Puerperal Fever	2								2		1		22	16	72.7	55	40	72.7
Rheumatism	245	1	339	5	364	4	207		307	2	396	5	4,195	44	1.0	11,721	84	0.7
Syphilis	240	1	544	2	419	4	612	2	384	6	658	9	5,701	86	1.6	12,528	150	1.2
Phthisis Pulmonalis	245	137	242	109	332	144	314	109	356	159	331	181	3,951	2,125	48.0	10,050	5,000	51.2
Tabes Mesenterica	2		1	1	1	1	1	1	3	2	3		35	25	71.4	74	54	72.9
Scurvy	18	3	17	3	10	1	6	1	8		6	2	101	14	14.4	420	40	9.8
Scrofula	9		13	1	12		14		25	2	20		225	14	6.2	117	30	7.1
Cancer	18	11	25	9	22	8	27	12	36	8	38	17	316	190	36.5	502	205	37.7
Leprosy (Elephantiasis Græcorum)			1										21	1	19.0	47	8	17.0
Yaws													2			4		
Diabetes									1		1		33	8	24.0	58	12	20.6
Anæmia	4		31	4	24	5	12	6	6		1		138	34	24.6	734	116	15.8
Anasarca (General Dropsy)	8	3	15	6	10	5	18	1	22	9	4	1	139	44	31.6	800	209	30.0
LOCAL DISEASES. Diseases of the Nervous System.																		
Congestion of the Brain			6	5	3	3	8	8	11	9	3	3	101	88	81.0	410	300	73.7
Abscess " "							4	2			4	4	13	11	84.0	15	13	86.6
Cerebritis and Encephalitis			7	4	2	2			3	3			40	30	75.0	184	125	67.9
Phrenitis													5	1	80.0	23	12	52.1
Meningitis			4	2	3	2	5	4	6	6	10	9	69	55	79.7	114	98	68.0
Cerebro Spinal Meningitis									1	1	3	2	35	24	61.8	81	57	70.3
Softening of the Brain	9	9	2	2	6	4	2	2	1	1			[illegible]	38	70.1	218	180	82.7
Apoplexy	2	1	3	3	8	7	7	6	9	7	14	13	163	139	85.2	509	309	60.7
Sun-Stroke (Insolation)	25	2	20	7	10	1	4	1	5	5	9	2	102	42	38.8	118	48	40.0
Paralysis	9	1	41	6	29	3	15	3	41	2	17	2	570	100	17.5	972	149	15.3
Hæmeplegia	7	2	12		21	1	16	3	12	7	27	2	434	69	16.0	535	81	15.1
Paraplegia			11	3	10	3	5	4	15	5	14	6	240	40	16.6	321	64	19.9
Tetanus: Unclassified			5	3	7	4	5	1	16	11	3		72	47	65.2	100	62	61.5
Tetanus: Idiopathic													8	5	62.5	10	10	83.3
Tetanus: Traumatic	1	1	6	6	1	1							56	49	87.5	172	141	81.9
Trismus Nascentium	1	1	1	1	1								6	6	100.0	23	21	91.3
Convulsions	9	5	3	2	2	2							36	21	66.6	108	63	58.3
Epilepsy	17	3	30	4	12	4	14	2	30	2	48	9	469	84	17.9	700	105	[illegible]
Delirium Tremens (Mania a Potu, Alcoholism)	28	7	71	6	66	8	25	4	34	4	124	8	1,705	141	8.3	4,005	914	19.4
Intemperance	89	4	75	1	129		56	1	71	1			130	15	3.4	1,013	97	5.1
Insanity	62	4	41		9		5		7		21	1	254	12	4.7	407	20	4.9
Dementia and Idiocy			3		9		5		6	3			188	5	2.6	226	7	3.1
Neuralgia	13				23		16		21		23		320			830	2	0.2
Diseases of the Circulatory System.																		
Pericarditis	9	1	3	2	4	1	1	1	1				50	27	54.0	157	61	38.8
Carditis and Endo-Carditis	1				1								20	11	54.8	80	22	25.5
Heart Clot													6	5	83.3	6	5	83.3
Hydro-Pericarditis									1	1			6	5	83.3	65	35	53.8
Hypertrophy of Heart	1	1							2				51	20	40.4	80	30	35.0
Fatty Degeneration of Heart													19	13	68.4	19	13	68.4
Mitral Regurgitation and Obstruction									71	40	61	36	460	237	51.5	460	237	51.5
Tricuspid Obstruction													4	2	50.0	4	2	50.0
Aortic Obstruction and Regurgitation													61	10	20.2	61	10	20.9
Aneurism	3	1	6	1	9	2			3	2	11	7	115	36	31.7	105	[illegible]	30.3
Heart Disease (Unclassified)	22	15	44	13	42	19	8	4					350	189	52.7	822	358	42.5
Diseases of the Respiratory System.																		
Pneumonia	68	40	117	38	99	35	104	24	94	41	67	46	1,846	684	37.0	3,021	1,368	34.8
Pleurisy	12	3	32	1	27	2	18	2	15	3	23	7	394	47	11.9	1,517	150	9.8
Hydro-Thorax	1	1					4	1			1	1	21	7	33.3	76	32	42.1
Pneumo Thorax													3	2	66.6	11	5	45.4
Hydro-Pneumo Thorax									1	1			8	4	50.0	27	13	48.1
Abscess of Lungs			1										14	9	64.2	14	9	64.2
Gangrene of Lungs			1				3	1			3	2	22	16	72.7	65	50	76.9
Catarrh	28		24		25	1			27		26		168	1	0.5	1,312	31	2.5
Influenza	2								2		3		10			157	7	4.4
Laryngitis	2	1	9		7		4	1	8	2	8	2	101	11	10.8	335	40	11.9
Bronchitis	61	9	81	2	87	10	63	8	118	3	69	3	1,307	105	8.0	4,666	235	5.0
Diseases of the Digestive System.																		
Diarrhœa	698	241	702	95	359	58	154	27	227	82	345	84	5,712	1,278	22.3	17,837	3,203	18.5
Dysentery	76	69	277	86	259	71	197	48	148	57	180	53	2,837	856	30.1	9,079	2,860	31.5
Constipation	18		39		22		23		2		18		213	1	0.4	1,018	2	0.2
Colic	12		37		16		27		6	1	6		150	2	1.3	684	5	0.7
Colica Pictonum (Painters-Colic)	3		17		9				13		10		122	4	3.2	840	19	2.2
Gastritis	2		15	1	11	1	7	1	14	1	11	5	219	42	19.1	1,673	124	7.4
Peritonitis	3	3	5	3	4	2	2	2	9		7	6	66	46	69.5	262	163	62.2
Enteritis	1	1	16	3	11	6	2		5	1	5	2	96	35	36.4	961	204	21.2
Gastro-Enteritis	4	1	2	1			3	2			3	3	35	21	60.0	692	251	36.2
Gastro-Duodenitis					1								2			60	21	35.0
Hepatitis	10	2	45	8	19	3	2	1	11	2	4	1	249	60	24.1	806	221	27.4
Abscess of the Liver			3	3			2		8	5	2	1	67	39	58.2	131	88	67.1
Cirrhosis of the Liver	9	7	17	7	11	4	14	9	11	7	17	10	296	174	58.7	390	240	61.5
Jaundice (Icterus)	10		21	2	16	3	11		9	2	6	1	139	15	10.8	697	90	14.0
Ascites	31	13	17	6	17	8	3	1	13	5	8		147	55	37.4	981	428	43.6
Hernia	16		12		9	1	14	3	12	3	17		174	17	9.7	449	37	8.2
Diseases of the Urinary and Generative Organs.																		
Nephritis	7		1		1				4	3	2		42	11	26.2	100	19	19.0
Albumenuria	15	8	33	9	28	6	13	6	25	11	61	27	513	224	41.2	625	264	42.1
Bright's Disease							12	7	14	8	4		143	61	42.6	194	88	45.3
Gravel and Calculus					1				2				17	2	11.7	42	2	4.7
Hæmaturia			5	1	2				2		1		21	6	28.5	31	7	22.5
Gonorrhœa	50		144		84		78		110		75		957	2	0.2	2,392	4	0.1
Orchitis	19		42		33		18		43		31		381			794	3	0.3
Cystitis	3	1	6	2	2				10	2	7	3	145	24	16.5	242	37	15.3
Cellular and Cutaneous System.																		
Elephantiasis			3	1							2		34	5	14.7	51	8	15.7
Psoriasis	1								4		2		32			115	1	0.8
General and Local Injuries, Etc.																		
Ulcers	160		295		299	1	275		290	1	239	9	4,029	24	0.5	10,513	46	0.4
Abscess	45	6	95	2	63	7	51	1	52	1	87	8	920	55	5.9	2,794	97	3.4
Burns	12	3	24	1	41	7	26	5	35	10	37	2	442	79	17.8	989	152	15.3
Scalds	1	1	9						1				12	1	8.3	296	34	11.6
Fracture	52	4	116	6	[illegible]	5	53	8	114	8	192	16	1,202	103	8.5	3,164	330	10.4
Contusion	76		131		56		56	1	3		54		863	13	1.5	5,280	42	0.8
Luxation	4		31		11		17		7		13		209	2	0.9	517	6	1.1
Wounds	72	3	309	9	225	5	121	11	150	8	252	9	3,145	134	4.2	6,464	323	4.9
Fistula, including Fistula in Ano	11		24		24		13		25	1	24		315	3	0.9	620	5	0.8
Frost Bite	1		1		1				1		2		29	1	3.4	50	1	2.0
Ptyalism			8				3		11	3	6		52	4	7.7	219	10	4.7
All other Diseases	602	64	707	88	432	70	508	79	734	109	1,113	120	10,883	1,681	15.4	28,242	3,152	11.1
TOTAL	4,861	812	9,329	1,122	8,612	1,438	4,981	490	6,177	784	7,837	1,118	96,857	14,104	14.5	304,213	43,718	14.3

NOTE—I have constructed the above Table from the reports of the Charity Hospital of New Orleans, which I have obtained from every available source after the consumption of much time and labor. As far as my information extends, the collection of reports in my possession is the most complete one now in existence. Several reports were obtained from the New Orleans Medical Journal and from Fenner's Reports. The classification and consolidation of the diseases from the Annual Reports, in which the diseases were simply published in alphabetical order, has been a work of considerable magnitude, and has been daily prosecuted, during the hours between 4 o'clock and 9 o'clock, A. M., during the Spring and Summer months of 1881. It is important to note the following discrepancies, which are most probably due to typographical errors, which cannot now be rectified, as the original manuscripts of the Annual Reports have not been preserved. In the Report for 1842, the figures representing the deaths number upon addition 760, while the number given in the Report accepted by the administration is 704. The discrepancy is referable to typographical errors, and the number of deaths has been retained as published by the authorities of the Hospital. In 1843, the total cases recorded in the list numbered 5067, while the Hospital Report gives a total of only 5013 admissions; this discrepancy appears to be due in a measure to the entrance upon the report of a large number of supervening diseases, thus making the cases treated actually greater than admissions. The addition of the deaths for 1844 gives the number 820, while the number entered upon the Hospital Report is 713. In 1876, the remaining cases in the Hospital are included in the list of diseases recorded, the total in the table being 6930, being in excess of the admissions, which are reported as 5690; but not in excess of the admissions and remaining, which numbered 6215. The unknown nativities, are included under the head of Natives of Foreign Countries. In every instance the figures representing the admissions of Natives of the United States and Foreign Countries, adopted officially by the Administrators of the Hospital, have been retained.

JOSEPH JONES, M. D., 156 Washington street, corner of Camp, Fourth District, New Orleans, Louisiana, August 1, 1881.

Great service was rendered the State by the firm support yielded by the General Assembly to the quarantine laws of Louisiana, and their enemies received a well-merited and severe rebuke by the passage of Act No. 69, "To fix and regulate quarantine charges at the Mississippi River Station, to establish a lien and privilege on vessels inspected in favor of the Board of Health for the same, and to provide for their enforcement and collection by provisional seizure."

Had the enemies of the Board of Health succeeded in convincing the Legislature that this bill, introduced into the House of Representatives of Louisiana by the honorable Chairman of the Committee on Health and Quarantine, "plainly and palpably violates at least two provisions of the United States Constitution, and in its tendency to prejudice our growing commerce is materially subversive of the great interests of Louisiana," the city of New Orleans, the State of Louisiana, and the entire Mississippi Valley would have been thrown open to the ravages of yellow fever.

The representatives of the people assembled in Congress manifested their want of confidence in the National Board of Health, and provided no adequate means for the protection from foreign pestilence of the Atlantic and Gulf coasts; and if the General Assembly had not defeated the designs of those immediately interested in the shipping of the port of New Orleans, and their representatives in the daily press, the scenes of suffering, pestilence and death witnessed in Pensacola on the East, and Brownsville on the West, would have been enacted upon a dreadful scale in New Orleans.

The decision of Judge Munroe, in the case of the Morgan's Louisiana and Texas Railroad Company against the Board of Health, No. 7001 of the docket of the Civil District Court for the Parish of Orleans, enjoining the board from collecting any fees under the quarantine laws of the State of Louisiana, practically declared the quarantine system of Louisiana, established by the act of 1885, *illegal, unconstitutional, and without any practical benefit to commerce.*

An immediate appeal to the Supreme Court of the State has been taken by the Board of Health and the Honorable Judge E. D. White and Hon. H. N. Ogden have been employed as additional counsel in this case.

As President of the Board of Health of the State of Louisiana, I have endeavored impartially to execute the quarantine laws, and have exerted every lawful means for the preservation of the city and State from the introduction of foreign pestilence.

EXCLUSION OF VESSELS INFECTED WITH YELLOW FEVER, AND VESSELS FROM PORTS IN WHICH YELLOW FEVER WAS PREVAILING FROM THE WATERS OF LOUISIANA.

The efforts of the Board of Health of the State of Louisiana, during the year 1883, which resulted in the exclusion of yellow fever from the State, and from the Mississippi Valley, are worthy of record.

It will be seen from the following record, that although yellow fever was brought into the Mississippi River and cases landed at the Mississippi Quarantine Station on the eighth of July, and then subsequently other cases were brought by infected ships from Vera Cruz, nevertheless the city of New Orleans, the State of Louisiana, and the entire Mississippi Valley were protected by the efforts of the Board of Health.

MISSISSIPPI RIVER QUARANTINE, LA.,
July 10, 1883.

To Dr. Joseph Jones, President Board of Health, New Orleans, La.:

Sir—I have the honor to report that the Swedish bark Berna, from Vera Cruz, arrived at this station on the morning of Sunday, July 8, 1883, entering the Mississippi River by way of S. W. Pass, having on board four cases of yellow fever.

The history of the vessel is as follows: Arrived in the harbor of Vera Cruz, from Cardiff, on April 26, 1883, with the following crew:

1. Nyberg, captain, Swede.
2. Hugberg, mate, Swede.
3. Heick, second mate, Swede.
4. Hanson, carpenter, Norwegian.
5. Bergren, cook, Norwegian.
6. Larsen, steward, Dane.
7. Rosenbloom, seaman, Norwegian.
8. Magnersen, seaman, Norwegian.
9. Sedenwald, seaman, Swede.
10. Abramson, seaman, Swede.
11. Halberg, seaman, Swede.
12. Person, seaman, Swede.

Mrs. Nyberg, wife of captain, and Magnus Nyberg, his son; being in all fourteen persons.

All remained well, with the exception of some mild intestinal affections, until June 20, when serious illness occurred, necesitating the presence of physician on board. The following list will show the dates of illness, and, as far as the captain knows, the nature of the disease:

1. Person, June 20, sick three days, fever, now on board.
2. M. Nyberg, June 21, sick three days, fever, black vomit, died in Vera Cruz.
3. Johansen, June 21, sick four days, fever, black vomit, died in Vera Cruz.
4. Rosenbloom, June 22, sick four days, left in hospital in Vera Cruz.
5. Sedenwald, June 24, sick three days, died in Vera Cruz.
6. Capt. Nyberg, June 24, sick five and one-half days, now on board, well.
7. Mate Hugberg, June 25, sick four and one-half days, now on board, with yellow fever
8. Manguersen, June 26, left in hospital in Vera Cruz.
9. Larsen, June 29, now on board, with yellow fever.
10. Mrs. Nyberg, July 2, now on board, with yellow fever.
11. Halberg, July 2, now on board, with yellow fever, convalescent.
12. Lagagren, July 2, sick three days, now on board, well.
13. Hugberg, July 7, now on board, sick with yellow fever.

Thus of the original crew, all have been sick, either in Vera Cruz or since leaving there, with the exception of Bergren, the cook, and Ambramson, seaman. The latter was indisposed in Vera Cruz, but for only a few hours. Lagagren joined the ship the day before she left Vera Cruz (June 29), but had been sick in the hospital at Vera Cruz for three days, and was said to have had fever. The captain supplied the places of his absent men by shipping Lagagren and four negroes, and started for Frontera on June 29. Sickness overcoming some of the crew, he changed his course for Pensacola, but finally put in to Southwest Pass, and was immediately towed up to this station, arriving here on the tenth day after leaving Vera Cruz, having on board

Larsen, in the tenth day of sickness.
Mrs. Nyberg, in the seventh day of sickness.
Halberg, in the seventh day of sickness; convalescent.
Hugberg, in the third day of sickness.

All the rest well. Mrs. Nyberg and Halberg entering the convalescent stage, and Hugberg, so far, progressing favorably toward recovery.

I have the honor to be your obedient servant,

(Signed) J. F. FINNEY, M. D., Resident Physician.

THE BARK BERNA—STATEMENT BY DR. JONES CORRECTING SOME FALSE STATEMENTS.

NEW ORLEANS. July 14, 1882.

Editor of the New Orleans Picayune:

Dear Sir—I would not trespass upon your valuable time, so fully and intelligently devoted to the advancement of the best interests of our State, to notice malicious and scurrilous attacks on personal grounds; but the editorial in the City Item of July 13, contains statements of a nature to be used by those unacquainted with the character of their author, and by the enemies of Louisiana in Chicago, Memphis, Vicksburg and other places in Illinois, Tennessee and Mississippi, for the purpose of injuring the sanitary and commercial reputaaion of New Orleans.

The Item, in an editorial of the thirteenth instant, states that "On Friday, July 6, the Swedish bark Bernia, nine days out from Vera Cruz, entered the river at Southwest Pass, having lost a number of the crew by yellow fever, and with four men then sick and several others convalescent. She was taken in tow by one of the tugs of the Ocean Line and brought up to Quarantine. * * *

"Her arrival in the river and her condition were promptly reported to Chicago on the sixth. A dispatch was immediately addressed from that city to Mr. E. K. Converse, and received by him on the seventh, asking if the reports were true. As he had heard nothing of them, he sent post-haste to the office of the Board of Health for information.

"Dr. Jones was absent as usual, and there was no one about who had heard the news, which had already traveled to Chicago many hours before.

"In a few days, however, the quarantine officials awoke to the fact that a fever infected ship had arrived: had been permitted to come up to quarantine, and some three days after her entry into Southwest Pass Dr. Jones fairly set to work issuing orders, as follows." * * * * * *

The statement of the chief operator of the Ocean Towboat Telegraph Company, and of Hon. E. K. Converse, President of the New Orleans Produce Exchange, herewith inclosed, fully expose the infamous and scurrilous fabrications of the City Item.

With great respect and high esteem, truly yours, JOSEPH JONES, M. D.,

OCEAN TOWBOAT LINE TELEGRAPH SERVICE, NO. 199 COMMON STREET,
NEW ORLEANS, July 14, 1883.

I hereby certify that no dispatch relative to the arrival of the bark Berna at the mouth of the Mississippi River was received at this office until the seventh of July, 1883.

This is the only line communicating by electric telegraph from New Orleans to the mouth of the Mississippi River at Port Eads and Pilot Town.

Dr. Finney's telegram was received at this office on the eighth of July, and was transmitted to the President of the Board of Health on the evening of the eighth instant, and reached Dr. Joseph Jones after the closure of this office.

The statement in the City Item, of the thirteenth instant, is incorrect, as the Berna was not sighted at the Southwest Pass until the seventh of July, and the disease was reported as climatic fever.

No dispatch was received directly from the officers of the vessel, and no dispatch was sent from this office to Chicago.

The accompanying records from the books will give the dates of dispatches received concerning the Berna.

WILLIAM WHANN,
Chief Operator, Ocean Towboat Line Telegraph Company.

Extracts from record and books of Ocean Towboat Line Telegraph Service:

Southwest Pass, July 7, 9 a. m., 1883.—A bark (Berna) anchored to west of bar, with Jack for pilot.
THORP.

Port Eads, July 7.—Ella Andrews left at 2:30 p. m. to tow a bark (Berna) from Southwest Pass to Quarantine.

Southwest Pass, Jluy 7, 1882, 6 p. m.—Ella Andrews tewing bark Berna. Inside.

Mississippi Quarantine Station, July 8, 1883.—Ella Andrews arrived up at 1:30 a. m. with a bark (Berna) and anchored it.

NEW ORLEANS, July 14, 1882.

Dr. Joseph Jones:

Dear Sir—In reply to your inquiry, I received no dispatch from Chicago in relation to fever at all, nor in reference to any fever ship arriving at the mouths of Mississippi River. Reports of firms here from Chicago asking if yellow fever was prevailing in New Orleans, to which receivers of those dispatches replied, "City perfectly healthy." Upon suggestian of Director it was thought best that I should send dispatch over my signature as President of the Produce Exchange to Board of Trade, Chicago, denying the rumor. Before sending I tried to telephone you, asking the question, but finding Board of Health has no telephone, I sent to Mr. I. N. Marks, who informed me you had just left his office, remarking, "No yellow fever and even no malarial."

Respectfully. E. K. CONVERSE.

MISSISSIPPI QUARANTINE, July 18, 1883.

To Dr. Joseph Jones, President Board of Health:

Steamship Buteshire arrived last night from Vera Cruz, where she had six cases of yellow fever, two of whom died there. She has had seven cases since, one of which died evening before last at sea. I removed three to the hospital this morning, one of whom will die this evening, the others are so far doing well. The Steamship Merchant arrived day before yesterday from Vera Cruz, having lost one of her crew at sea from yellow fever; everybody well since.

[Signed] J. F. FINNEY, Resident Physician.

Copy of telegram to Dr. Finney relative to the above:

NEW ORLEANS, July 18, 1882.

To Dr. F. Finney, Mississippi Quarantine Station:

Isolate, disinfectand fumigate steamships Buteshire and Merchant. Execute all rules and regulations of Board of Health. Hold these vessels subject the orders of the Board of Health.

Keep the Board advised by telegram.

[Signed] JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

NEW ORLEANS, July 19, 1883.

His Excellency, Samuel Douglas McEnery, State Capital, Baton Rouge, La.:

Dear Sir—I have the honor to enclose for the consideration of your excellency the following:

1. Table L, Illustrating the Progress of Population in Louisiana During the Past Century, Including Census of 1880. Upon the data furnished in this letter must be based the calculations of vital and mortuary statistics in all the various parishes.

2. History and Theory of Quarantine—A Defence of the Quarantine Laws of Louisiana. This is the most vital and important of all questions with reference to the future prosperity of Louisiana.

3. Report of Conference Committee.

Two more vessels have arrived at Mississippi Quarantine Station, with yellow fever aboard. No case and no suspicious cases reported in this city. The situation, however, is *grave*. We are surrounded with yellow fever. Every vessel leaving Vera Cruz, Havana or Rio de Janeiro is more or less infected.

I shall advise the most stringent measures at the meeting of the Board of Health this night, and I will urge the passage of an ordinance prohibiting the passage of any vessel from any Quarantine station to the city of New Orleans. The cargoes can be sent down on lighters, and the vessels depart from the Quarantine Station.

Respectfully, JOSEPH JONES,
President Board of Health, State of Louisiana.

BOARD OF HEALTH PASS ADDITIONAL QUARANTINE REGULATIONS (JULY 19, 1883).

[Extract from minutes of Board of Health, regular meeting, evening of July 19, 1883.]

In conformity with previous action of the Board, the President announced that he had written to the Governor of the State representing the danger of any species of communication between quarantine stations and the surrounding country during the existence of yellow fever there, and in reply he had received the following:

EXECUTIVE DEPARTMENT, STATE OF LOUISIANA,
BATON ROUGE, La., July 18, 1883.

In accordance with a preamble and resolution of the Louisiana State Board of Health, adopted July 12, 1883, a copy of which is hereto annexed, and in consideration of the imminent danger that the city of New Orleans, the State of Louisiana, and the Mississippi Valley are now in from the arrival at quarantine of infected vessels, any unnecessary intercourse between the Mississippi Quarantine Station and other quarantine stations and the city of New Orleans is hereby strictly prohibited, and any permission for that purpose heretofore granted is hereby revoked. The laws of Louisiana and the rules and regulations of the Board of Health must be rigidly enforced and obeyed in this and all respects while danger continues. Intercourse between the quarantine stations and New Orleans must be under the exclusive control of the Board of Health. I invoke the vigilance and co-operation of all good citizens during this season of threatened calamity.

This order will be communicated by the Board of Health to all persons concerned therein.

S. D. McENERY, Governor.

The following paper was then read. The President stated that it was an addition to the quarantine regulations of this port, providing increased precautions for the protection of the city and State against the invasion of yellow fever. It provides the complete exclusion of yellow fever ships from this port, and for the inspection of railways. Its proposition will be seen in detail as follows:

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA.

Whereas, the Mexican ports of Matamoros, Tampico, Tuxpan, Vera Cruz and Minatitlan; all ports on the islands of Cuba, Hayti or San Domingo, Porto Rico and Jamaica, and the Brazilian ports of Rio de Janeiro, Bahia and Pernambuco are now infected with yellow fever; and

Whereas, no proper system is enforced to prevent the spread of the pestilence to the adjoining coast, many towns and villages of which are in hourly and daily unrestricted intercourse with said infected places, thus rendering them liable to momentary infection, even if the disease does not exist there now; and

Whereas, Asiatic cholera is now prevailing in certain ports of Asia and Africa, and reports of its spreading to European ports are prevalent, from which contagion might be introduced by vessels arriving at this port therefrom;

Whereas, Section 4, of the act of the State of Louisiana, approved March 18, 1858, and section 1 of the act of March 24, 1876, and section 7 of the act of April 20, 1877, vest in the Board of Health of the State of Louisiana the power and authority in cases of emergency to issue proclamation of quarantine and enforce the same, as against ports other than those named in the proclamation of his Excellency the Governor of Louisiana, the said board issues this its proclamation that quarantine take effect from the date hereof as against all places and towns adjacent and contiguous to the Mexican ports of Matamorous, Tampico, Tuxpan, Vera Cruz and Minatitlan, and the Brazilian ports Rio de Janeiro, Bahia and Pernambuco, and between which and said infected ports unrestricted intercourse is allowed and no rigid quarantine enforced, and all vessels coming therefrom shall be detained ten days and fumigated and cleansed as in cases of vessels coming from infected ports named.

Also, that all vessels or persons holding intercourse or having personal contact with any or all vessels, or the crew, passengers or inmates thereof, quarantined, at Ship Island or any other point on the Mississippi coast or any of the quarantine stations, shall not be allowed to enter the State of Louisiana unless detained at the nearest quarantine station for the space of ten days, and after being cleansed, fumigated and disinfected.

That all vessels or the crews thereof, actually infected with yellow fever or Asiatic cholera, arriving at the quarantine stations, will not be allowed under any circumstances to come to the city of New Orleans; but all such vessels having cargoes for or desiring to load from said port, will be required to discharge and receive cargo by lighters and barges, in conformity to such rules and regulations as may be from time to time adopted by the Board of Health.

That all railroads conveying passengers and freight in and to the city of New Orleans will be required to stop any and all trains at the quarantine stations established on their respective routes a sufficient length of time for proper inspection, under such rules and regulations as may be from time to time adopted by the Board of Health in relation thereto.

The quarantine officers at the several stations are specially charged and directed to enforce strictly the execution of this proclamation, and to exercise the utmost vigilance in exacting the strictest conformance thereto, and the Board of Health of the State of Louisiana will apply the most summary methods accorded by the laws of the State of Louisiana in punishing any violation or evasion of its provisions.

Issued by order of and under the seal of the Board of Health of the State of Louisiana at the city of New Orleans, this ——— day of ———, 1883.

The paper excited some debate, Dr. Formento demanding non-intercourse with Vera Cruz and Havana as long as yellow fever exists at those places.

Mr. Marks moved that it be adopted.

Dr. Formento said it contained too much and not enough. It took in several countries as a whole. He thought a clause should be introduced requiring complete non-intercourse with Vera Cruz and Havana for the present. We cannot be too strict with these localities.

Mr. Booth said that non-intercourse was the refuge of fear.

He did not think such a step should be taken at once without consideration. Quarantine meant investigation. He said the vessels arriving had been notoriously bad so far as their condition was concerned. He could not give his consent to so severe a measure as non-intercourse. There are fair vessels coming from these ports. He favored the railroad quarantine spoken of in the proclamation. Railroads had brought every inland town to the borders of the sea.

Mr. Marks favored the adoption of the proclamation, and said the Board never before stood in such a responsible position. He strongly favored the clause preventing the coming to the city of vessels on which fever cases may have shown themselves. They should be kept at the quarantine station, and should discharge their cargoes there if the consignees so desired. Every avenue should be closed between the station and here to prevent contagion from entering. This might require a sacrifice on the part of commerce, but this was necessary.

Mr. Booth said the importance in a commercial point of view was very great. This proclamation would cut off certain vessels from our wharves. The Board had never gone so far before, and the community might not like so much extra zeal.

The proclamation was then unanimously adopted.

Mr. Booth urged that this board should execute the laws as it finds them. Quarantine does not mean non-intercourse, but restrained intercourse in the interests of public health.

The regulations were adopted as read.

Deputy Inspector of Shipping Dr. Stanhope Jones reported for May: vessels inspected 73, seamen 1636, passengers 271; total persons 1997.

Inspected for June—Vessels 65, seamen 1285, passengers 350, total persons 1625; vessels ten days in quarantine 34, vessels five days in quarantine 5, total vessels in quarantine 39

Inspected in July to 19th inst.—Vessels 34, seamen 609, total persons 703; vessels ten days in quarantine 7, vessels five days in quarantine 2, total 9.

Total vessels inspected 172, total seamen 3530, total passengers 705, total persons 4535; total vessels ten days in quarantine 41, total five days 7, total vessels that have passed through quarantine 48. He also reports the river front has been carefully watched, and all vessels arriving have been inspected. Vessels which have been detained in quarantine, on reaching this city are inspected, re-visited and watched. The condition of all such vessels showed upon arrival that they had been thoroughly fumigated, disinfected and cleaned at Quarantine Station.

He also reports that the basins have been constantly visited and the water craft therein inspected. All have been found in good condition. Up to July 19 there has not been in the shipping in port a single case of yellow fever or a suspicious case.

Under the head of new business, Dr. Formento called up his resolutions of co-operation, laid over from the last meeting. Amended by Mr. Marks they read as follows:

"Whereas, the combined efforts of all the citizens of New Orleans are absolutely necessary, in order to improve the sanitary condition of our city and render it both healthy and attractive.

"Whereas, hygienic measures of any magnitude cannot be accomplished without large sums of money, which in the present financial condition of our city and State Governments, must come from the voluntary contributions of the people.

"Whereas, the public good should be our sole aim, and to that end all partisan and technical considerations should be discarded.

"Whereas, it is of vital importance to perfect this coming season our system of local sanitation, in order that the vast concourse of people from all parts of the Union who will attend the World's Cotton Centennal Exhibition should be favorably impressed with the sanitary condition and general appearance of the city; be it therefore

Resolved, That the Board of Health of the State of Louisiana, responsible guardians of the public health, recognizes the absolute necessity of co-operation and concert of action with all citizens and associations having at heart the welfare and sanitary improvement of the city, and hereby expresses its desires and readiness to adopt any plan of action conducive to the public good, without, in any manner, delegating to others its constitutional authority; be it

Resolved, That to better secure such desirable co-operation and assistance the Conference Committee of this Board of Health be duly instructed to meet in consultation the Conference Committee of the Auxiliary Sanitary Association and all other volunteer organizations desirous of promoting the sanitary improvement of the city, whenever such association shall have endorsed and commend to public confidence the State Board of Health of Louisiana."

Dr. Formento resisted the amendment, and his motion to lay it on the table was defeated by the following vote: To lay on table—Formento and Van Gohren, 2; noes—Booth, Bosworth, Kells, Marks and Pratt, 5.

The debate on the resolutions which then came up for adoption was interesting. Mr. Marks showed that the Sanitary Association had invariably allied itself to bodies authorized and unauthorized, that had been habitual slanderers of this board, enemies of the quarantine system and Board of Health of the State of Louisiana, had always been received with open arms by the New Orleans Auxiliary Sanitary Association.

Mr. Booth contended that the Sanitary Association did not ask any co-operation from this board, and he did not see why the board, representing the law and vested with all the power in matters of health, should unasked seek co-operation with a volunteer body of citizens, unless there was some assurance that the volunteer body wanted co-operation. For the purpose of securing some such assurance on the subject he voted for Mr. Mark's amendment. The resolutions as amended were then adopted.

Mr. Marks then offered the following:

"Whereas, Dr. J. H. Rauch, the Secretary of the Board of Health of the State of Illinois, has recently visited New Orleans and directly interfered and tampered with the health operations of the State Board of Health of Louisiana; and

"Whereas, since the dissolution of the National Board of Health there has been an effort made by illegal bodies to assume to perform its pernicious functions and mischievous tendencies:

"*Be it resolved*, That the President of this board be and he is hereby requested to respectfully suggest to his Excellency the Governor of Louisiana to confer with his Excellency the Governor of Illinois on the propriety of confining Dr. J. H. Rauch to health operations within his own State, and to instruct him to cease his designing efforts to impair public confidence in the State Board of Health of Louisiana."

The resolutions were adopted, after vigorous and emphatic speeches by Messers. Marks and Booth, reciting in detail the interferences of Dr. Rauch with the operations to this board.

The board then adjourned.

PROCLAMATION.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA.

Whereas, the Mexican ports of Matamoros, Tampico, Tuxpan, Vera Cruz and Minatitlan; all ports on the islands of Cuba, Hayti or San Domingo, Porto Rico and Jamaica, and the Brazilian ports of Rio de Janeiro, Bahia and Pernambuco are infected with yellow fever; and

Whereas no proper system of quarantine is enforced to prevent the spreadof the pestilence to the adjoining coast, many towns and villages of which are in hourly and daily unrestricted intercourse with said infected places, thus rendering them liable to momentary infection, even if the disease does not exist there now; and

Whereas, several vessels from said districts of country infected with said disease are now lying in close proximity to the seacoast of Mississippi and the Mississippi Quarantine Station; and

Whereas, Asiatic cholera is now prevailing in certain parts of Asia and Africa, and reports of its spreading to European ports are prevalent, from which contagion might be introduced by vessels arriving at this port therefrom; and

Whereas, Section 4 of the act of the State of Louisiana, approved March 18, 1858, and section 1 of the act of March 24, 1876, and section 7 of the act of April 20, 1877, vests in the Board of Health of the State of Louisiana the power and authority in cases of emergency to issue proclamation of quarantine and enforce the same, as against ports other than those named in the proclamation of his Excellency the Governor of Louisiana:

The said board issues this its proclamation, that quarantine take effect from the date hereof as against all places and towns adjacent and contiguous to the Mexican ports of Matamoros, Tampico, Tuxpan, Vera Cruz and Minatitlan, and the Brazilian ports of Rio de Janeiro, Bahia and Pernambuco, and between which and said infected ports unrestricted intercouse is allowed and no rigid quarantine enforced; and all vessels coming therefrom shall be detained ten days and fumigated and cleansed, as in cases of vessels coming from the infected ports named.

Also, that all vessels or persons holding intercourse, or having any personal contact with any or all vessels, or the crews, passengers or inmates thereof, quarantined at Ship Island or any other point on the Mississippi coast or any of the quarantine stations shall not be allowed to enter the State of Louisiana unless detained at the nearest quarantine station for the space of ten days, and after being cleansed, fumigated and disinfected.

That all vessels or the crews thereof actually infected with yellow fever or Asiatic cholera arriving at the quarantine stations will not be allowed, under any circumstances, to come to the city of New Orleans.

That all railroads conveying passengers and freight in and to the city of New Orleans will be required to stop any and all trains at the quarantine stations established on their respective routes a sufficient length of time for proper inspection, under such rules and regulations as may be from time to time adopted by the Board of Health in relation thereto.

The quarantine officers at the several stations are specially charged and directed to enforce strictly the execution of this proclamation, and to exercise the utmost vigilance in exacting the strictest conformance thereto, and the Board of Health of the State of Louisiana will apply the most summary methods accorded by the laws of the State of Louisiana in punishing any violations or evasions of its provisions.

Issued by the order of and under the seal of the Board of Health of the State of Louisiana, at the city of New Orleans, this twenty-third day of July, 1883.

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

A true copy: S. S. HERRICK, M. D., Secretary.

NON-INTERCOURSE WITH CITIES AND LOCALITIES INFECTED WITH YELLOW FEVER OR ASIATIC CHOLERA.

[Extracts from Proceeding of the Board of Health, State of Louisiana, held Monday evening, July 23, 1883.]

On Monday evening, at 7:30 o'clock, there was a special meeting at their rooms, corner of St. Louis and Royal streets, of the Board of Health to confer with a joint committee representing the commercial bodies of this city.

Of the Board of Health were present: President Joseph Jones, M. D.; Drs. Faget, Formento, Pratt and Von Gohren, and Messrs. Booth, Bosworth, Kells and Marks.

Of the joint committee were Messrs. J. J. Stewart, A. Schreiber, J. V. Moore; of the Stock Exchange were C L C. Dupuy, H. W. Connor and H. Neugass; H. D. Coleman and W. G. Wheeler, of the Mexican Exchange; Fendel Horn, L. H. Joseph and W. M. Burrell, of the Chamber of Commerce; also Messrs. A. A. Woods. A. Leblanc, Col. J. W. Glenn, Capt. Joseph H. Lawler, Dr. W. G. Austin, and other citizens.

The President of the Board of Health read a telegram from Surgeon General Hamilton of the Marine Hospital Service at Washington, announcing the existence of Asiatic cholera at London. He also read the following letter from Gov. McEnery:

EXECUTIVE DEPARTMENT, STATE OF LOUISIANA,
Baton Rouge, July 20, 1883.

To the Louisiana State Board of Health:

Gentlemen—Owing to the number of infected vessels with sick crews and dangerous cargoes arriving in the Mississippi and detained at Quarantine Station, that station has become practically an infected port, and especially dangerous from its proximity. This causes great and rapidly increasing alarm at home and in adjoining States, as well as throughout the Southern Valley of the Mississippi.

While a stupendous calamity threatens the lives of our people, all rational measures of self-protection become just and imperatively necessary. The safety of our city and State and the highest public interests now demand stringent precautionary measures.

Therefore I suggest and urgently recommend that from this date until the first of November no vessels infected or vessel with sick crew or passengers be permitted to enter the Mississippi River, and that all infected vessels and vessels with sick crews now at Quarantine Station be sent out of the river as soon as practicable to some convenient locality.

The action of the Board of Health in this regard will be maintained to the full extent.

S. D. McENERY, Governor.

Mr. Schreiber of the Joint Committee then presented the resolutions adopted at the meeting of the Cotton Exchange on Saturday.

Resolved, That the State Board of Health be requested to petition the Governor of the State to have all infected vessels now in the waters of this State removed out of the same, and that he issue his proclamation that henceforth no vessel from any port be permitted to enter the waters of this State.

Resolved, That the Board of Health be requested to reconsider and rescind its action of eighteenth instant, relative to loading cargoes of infected vessels at Quarantine Station.

Resolved, That the commercial bodies here represented have confidence in the State Board of Health and in its efficiency, and believe it is entitled to the confidence of the people throughout the Valley of the Mississippi.

Mr. C. L. C. Dupuy spoke, declaring the importance of the policy embodied in these resolutions.

Mr. Burwell spoke as to the importance of protecting our trade relations with the tropics by all possible safe-guards against disease, but at the same time to beware of the efforts of communities north of us who are interested in breaking down by every possible means the commerce of New Orleans in the interest of Eastern railways.

Col. F. C. Zacharie, counsel for the board, read a legal opinion on the power and rights of States to exclude infected shipping from their ports.

The President then spoke of the work of this board, as at present organized, since 1880. With stinted means at its command it had undertaken to guard the entire coast of Louisiana, and so far no epidemic of foreign pestilence has made its appearance in this city or State.

During the present year the three principal quarantine stations of the State had been improved and made more adequate to the uses they were intended for, and every effort had been made to render the service if possible more efficient. The station at the Rigolets had been removed to Rabbit Island and had been greatly improved. It is so situated as to command the entrance to Pearl River, and it is working in connection with the authorities of Harrison county, Mississippi, for the protection of all points on Pearl River. The Rigolets station protects the back door of New Orleans; two thousand vessels enter the city annually from the Lake.

He spoke also of the vessels in the river from Vera Cruz. The Buteshire has been completely isolated from communication with the city, and is about to depart, while the Merchant, which has had no sickness while in quarantine, has sailed.

At the last meeting of the board stringent regulations had been adopted for the treatment of infected ships. The State of Louisiana and the Mississippi Valley had been protected from yellow fever by the rigid and intelligent execution of the quarantine laws of Louisiana, which the President conceived to be ample for the present and all future emergencies.

Mr. Marks then offered the following:

Resolved, That the State Board of Health of Louisiana fully indorses the resolutions adopted by the committee of the conference held at the Cotton Exchange on the twenty-first:

Resolved, That the Governor of Louisiana be and he is hereby requested to issue a proclamation of non-intercourse with ports infected with yellow fever, namely [list to be added]; and to order all infected vessels out of the waters of the State, as recommended by him in his letter of the twentieth instant to this Board.

The resolutions were favored by Messrs. Marks, Formento and Von Gohren.

Mr. Booth said he could not support them. They destroyed all scientific quarantine. Quarantine was not the blockading of a port, but the detention under wise regulation of infected persons and ships. Quarantine meant originally forty days. We could detain vessels and persons as long as might be necessary to give protection, but he was opposed to the barbarous processes of exclusion. We had protested against the merciless shot-gun quarantine as applied to us, but we now propose to apply it to ships in distress. Hospitality has its just demands as well as commerce, and to listen to the counseling of a blind panic is not the part of the guardians of the public health.

The resolutions were put to a vote and adopted, Mr. Booth alone voting no.

The following, offered by Dr. Formento, was adopted:

Whereas, there is danger of yellow fever being introduced into New Orleans through unrestricted communication between Ship Island and the coast of the State of Mississippi; be it

Resolved, That the Governor of the State of Louisiana be requested to call the attention of the Governor of Mississippi to this fact, and urge him to take stringent measures to put a stop to this dangerous intercourse; be it

Resolved, That the general government be requested, through the proper authorities, to order that no communication should be held between Ship Island and the Mississippi coast.

Dr. Jones said that since the station at Ship Island had passed into the hands of the Marine Hospital Service it has been guarded wirh great strictness, and he did not believe there was any justice in attacks on it. He believed that Surgeon General Hamilton and his assistants were exerting their utmost to isolate the place, and he felt sure it was being done. The State Board of Health of Mississippi does not take proper care of the sea coast line of the State, which is left to local sanitary authorities.

The meeting then adjourned.

NEW ORLEANS, July 24, 1883.

His Excellency, Samuel Douglas McEnery, Governor State of Louisiana, Baton Rouge, La.:

Dear Sir—I have the honor to inclose herewith resolutions adopted by the Board of Health, of the State of Louisiana, at the special meeting held last evening, for the purpose of considering the communication of your Excellency; also copy of resolutions of joint conference of meeting of official committees of New Orleans commercial bodies.

With great respect your obedient servant,

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana

OFFICE SECRETARY OF STATE, STATE OF LOUISIANA,
BATON ROUGE, July 24, 1882.

Dr. Joseph Jones, President Board of Health, New Orleans:

My Dear Doctor—I am directed by the Governor to transmit to you, herein enclosed, his proclamation pursuance with the resolution of the Board of Health, with the request that you will give it as much p licity as you can, in view of the importance of the subject matter.

Very respectfully, your obedient servant,

OSCAR ARROYO,
Assistant Secretary of State

ADDITIONAL QUARANTINE PROCLAMATION.

EXECUTIVE DEPARTMENT,
STATE OF LOUISIANA.

Whereas, at a meeting of the Board of Health of the State of Louisiana, held in city of New Orleans, on the twenty-third day of July, 1883, the following resolution adopted:

Resolved, That the Governor of Louisiana be and is hereby requested to issue a proclamation of non-intercourse with ports infected with yellow fever, to-wit: Vera Cruz, Rio de Janeiro, Havana, and such other ports as may become infected with yellow fever, and to order all infected vessels out of the waters of the State, as recommended by him in his letter of the twentieth instant to the board."

Now, therefore, I, Samuel D. McEnery, Governor of the State of Louisiana, by virtue of the authority in me vested by law, and in pursuance of the above resolution, do hereby order and direct that all vessels now at the Quarantine Station, on the Mississippi River, which are infected with yellow fever, be removed without unnecessary delay * * and I do hereby further order and direct that all vessels from the ports above named, and such other ports as may become infected with yellow fever, be prohibited from entering the waters of the State of Louisiana.

The Quarantine officers at the Quarantine Station are especially charged and directed to enforce strictly the execution of this proclamation, and the Board of Health is requested to prosecute vigorously all violations of the same.

Given under my signature and the seal of the State of Louisiana, at the city of Baton Rouge, this twenty-fourth day of July, A. D., 1883. S. D. McENERY,

Governor of Louisiana.

By the Governor:

OSCAR ARROYO, Assistant Secretary of State.

EXECUTIVE DEPARTMENT, STATE OF LOUISIANA,
BATON ROUGE, LA., July 28, 1883.

Dr. Joseph Jones, President Louisiana Board of Health:

Sir—Respecting the vessels sent away from the Mississippi River, it is obvious that their future course and destination are entirely beyond the control of State authorities. It is for their owners or masters to send them to the ports whence they came or to a nearer temporary refuge. They will naturally for the most part be sent to the nearest refuge station. Such infected vessels as may go from the Mississippi River to Ship Island will be received at the United States Refuge Station there, of which I have the direct assurance of the Hon. Chas. J. Folger, Secretary of the Treasury, by telegraphic dispatch dated July 27. Masters of vessels sent away should be informed of this privilege, with or without counsel in the matter from the Board of Health, as the latter may see proper. The clearing of the Mississippi River from infection is a measure of paramount necessity. While we endeavor to mitigate the incidental hardships resulting from its execution, we assume no new responsibility.

I have abiding confidence in the vigilance, energy and wisdom of our State Board of Health. Yours very respectfully, S. D. McENERY,

Governor State of Louisiana.

QUARANTINE, July 25, 1883.

Joseph Jones, M. D., President Board of Health:

No new cases. Only three convalescents; balance well. Have had no sickness on any vessel here, except bark Berna and steamship Buteshire. The following vessels are here: Brig Ana Faura, steamship Gracia, ship Angelita, steamship Emiliano and schooner Susan Scranton, from Havana; schooner Alice C. Noyes, from Carthagena, and steamship Architect, from Colon, and bark Berna, from Vera Cruz, which will leave shortly. J. T. FINNEY, M. D., Resident Physician.

QUARANTINE, July 26, 1883.

Joseph Jones, M. D., President Board of Health, State of Louisiana:

Does Governor's proclamation apply to vessels nearly ten days here, and which have been perfectly healthy? Does it include vessels arriving from all the Cuban ports, or only vessels from Havana direct?

J. T. FINNEY, M. D.

PORT EADS, July 25, 1883.

Dr. Joseph Jones, President Board of Health:

E. D. Sidbury in sight, from Vera Cruz. If sickness on board, what steps shall I take?

HART, Inspector.

NEW ORLEANS, July 25, 1883.

Dr. G. H. G. Hart, Board of Health Inspector, Port Eads:

Anchor Sidbury and await further orders, and allow no communication whatever.

JOSEPH JONES, M. D.

THE BOARD OF HEALTH RESOLVES NOT TO PERMIT THE STEAMER EMILIANO, FROM HAVANA, TO COME TO THE CITY.

The Board of Health met at their rooms corner of St. Louis and Royal streets, on Friday afternoon at 1 o'clock, July 27, 1883, with President Joseph Jones, M. D., in the chair, and Messrs. Booth, Bosworth, Kells, Marks and Drs. Formento and Von Gohren present.

The board then went into executive session and so continued for nearly an hour. About 2 o'clock the doors were opened, when the President read a number of communications, the most importaat of which were the following:

A telegram from Dr. Finney at the Mississippi Quarantine Station:

QUARANTIE STATION, May 25, 1883.

Joseph Jones, M. D., President of the Board of Health:

No new cases of yellow fever; only three convalescents, balance all well; have had no sickness on any vessels here except bark Berna and steamship Buteshire. The following vessels are here: Brig Anna Faura, steamship Gracia, ship Angelita, steamship Emiliano, also the schooner Susan Scranton from Havana, schooner Alice C. Noyes from Carthagena and steamship Architect from Colon. The bark Berna from Vera Cruz will leave shortly.

J. T. FINNEY, M. D.,
Resident Physician.

Also the following from Dr. G. H. J. Hart, medical officer at the Jetties:

JETTIES, July 25.

Dr. Joseph Jones, President of the Board of Health

Steam schooner Sidbury in port, at anchor, from Tampico, previously from Vera Cruz,

HART, M. D. Inspector.

Also, the following from the clerk of the Commissioner of Police:

DEPARTMENT OF POLICE AND PUBLIC BUILDINGS,
New Orleans, July 27, 1883.

Sir—I am directed by Commissioner Mealey to ask you if you would be kind enough to request the Sanitary Inspectors of the different districts to visit the markets and examine the meats offered for sale, and he will instruct the inspectors of the markets to be under the control of your inspectors.

There appears to be a strong desire to correct the abuse of selling unwholesome food in the markets, and he asks that you and your inspectors help in this matter.

Yours, etc.,

D. M. McCARTHY, Chief Clerk.

Also the following, which is a copy of instruction sent to the medical officer at the jetties:

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, July 26, 1883.

Dr. G. H. G. Hart, Quarantine Inspector, Port Eads:

Sir—Inclosed I herewith forward for your information and guidance, additional quarantine proclamation of His Excellency, Samuel Douglas McEnery, of July 24, 1883; also proclamation of Board of Health of State of Louisiana, of July 23, 1883.

Show the proclamation of His Excellency, Gov. S. D. McEnery, to the captain or master of vessels from ports infected with yellow fever informing him that in accordance with the orders of the Governor of Louisiana, he will not be permitted to bring his vessel with her crew and cargo within the waters of this State.

Proceed in a similar manner with all vessels coming from the ports named in the Governor's proclamation. In the event that a vessel should arrive from any other port in which yellow fever or Asiatic cholera is prevailing, or in the event that any vessel has had yellow fever or Asiatic cholera, in the ports from whence she sails, or on the voyage, proceed in the same manner.

Allow no vessel from the ports mentioned, or from any port infected with yellow fever or Asiatic cholera, to enter the Mississippi River.

Inform the pilots of the provisions of the Governor's proclamation, and report any violation of the laws of Louisiana by the pilots, or any seaman, traveler or citizen, to the Board of Health.

Respectfully,
JOSEPH JONES M. D.,
President Board of Health, State of Louisiana.

Mr. Marks then stated that the chief business of the meeting was to act on the petition of A. K. Miller & Co., stating that the Spanish steamship Emiliano, from Cienfuegos, Cuba, via Havana, had arrived at Quarantine Station at 11:45 p. m., twenty-third instant, with all well on board. He asked that this vessel, an iron steamship, in ballast, be permitted to come up the river after the ordinary quarantine observation as she had arrived previous to the declaration of the non-intercourse policy.

He did not see how the board could admit any ship from the infected ports named in the proclamation of non-intercourse, as it was the presence in the waters of the State of these very ships that had caused the public alarm that had given rise to this policy of non-intercourse.

Mr. Marks then offered the following:

Resolved, That under existing proclamations concerning quarantine, the Board of Health cannot grant the request made in behalf of the steamship Emiliano.

Dr. Formento, one of the prime movers of the original resolutions on non-intercourse, now advocated the granting of the petition of Messrs. Miller & Co., and offered the following:

Resolved, That the steamer Emiliano, which arrived in the Mississippi River before the issuance of the Governor's non-intercourse proclamation, and is not an infected ship, be detained at the Quarantine Station until such time as the Board of Health may consider proper to allow her to come to the city.

Mr. Marks said a vessel from an infected port is in public opinion an infected vessel, and in the opinion of the people of the Mississippi Valley a subject of alarm, and this Board cannot trifle with such a matter. The presence of yellow fever of a virulent type at Havana and Vera Cruz had excited such general alarm that leading commercial bodies and citizens of all classes had demanded the entire exclusion of all vessels coming from those ports attempting to enter here. The vessels in the river at Quarantine Station from those ports had caused the general outcry for their exclusion.

This Board cannot afford to pass resolutions of non-intercourse and then set them aside for any considerations of friendship or commercial profit.

Mr. Booth said he was not surprised that the severity of the rule of non-intercourse, even at this early day, was found to be oppressive by its promoters and originators. He, for his part, had opposed such a policy. He had thought that this Board, by means of its excellent and thorough arrangements for detention and disinfection, was able to cope with the dangers of infected shipping; but absolute exclusion of all shipping arriving from certain ports had been insisted on, and that policy had become a law to bind this Board. Now there was nothing left to this Board but to execute that law with the utmost strictness. It had been said by another, General Grant, he believed, that the best way to do away with an obnoxious law was to enforce it with stern impartiality, and there is no other way to act in the present instance.

Dr. Formento's substitute for Mr. Marks's resolution was put to the vote, and lost by the following:

Ayes—Formento and Von Gohren—2.

Noes—Booth, Bosworth, Marks and Kells—4.

Mr. Marks's resolution to exclude the Emiliano was then adopted.

MATTERS AT QUARANTINE—GOVERNOR McENERY MAKES FINAL DISPOSITION OF DR. PATTON—A STUBBORN SKIPPER—A FEVER SHIP OUTSIDE THE BAR.

The following dispatches passed yesterday:

NEW ORLEANS, July 31, 1833.

Dr. J. F. Finney, Resident Physician, Mississippi Quarantine Station:

The quarantine powers of the National Board of Health having expired, and Dr. G. Farrar Patton being a representative neither of the National Board nor of the United States Marine Hospital Service, the order permitting him to remain at the Mississippi Quarantine Station is hereby rescinded, and the said Patton, formerly Inspector of the National Board of Health, is hereby ordered to leave the Mississippi Quarantine Station, and will be subjected to such quarantine, isolation, detention and disinfection as may be in accordance with the rules and regulations of the Board of Health of Louisiana.

S. D. McENERY, Governor of Louisiana.

MISSISSIPPI QUARANTINE STATION,
July 31, 1883.

Dr. Joseph Jones, President Board of Health:

The captain of schooner E. D. Sidbury refuses to leave here unless he is permitted to discharge his cargo. Everybody perfectly well here.

J. F. FINNEY, Resident Physician.

[Answer.]

NEW ORLEANS, July 31, 1883.

To Dr. J. F. Finney, Resident Physician Mississippi Quarantine Staiton:

Inform captain of the E. D. Sidbury that he will not be allowed to discharge his cargo; neither will he be allowed to come up to the port of New Orleans. I have seen Gov McEnery, and this is his decision, in accordance with that of the Board of Health. The Governor of Louisiana will use every means, moral and physical, to sustain the provisions of his proclamation for the protection of the State of Louisiana and the Mississippi Valley from the introduction of yellow fever and Asiatic cholera.

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

PORT EADS, July 31, 1883.

To Joseph Jones, M. D., President Board of Health:

Steamer ———, four days from Vera Cruz. One case sickness on board. Anchored one mile to sea.

G. H. J. HART, M. D., Inspector.

NEW ORLEANS, July 31, 1882.

To Dr. G. H. J. Hart, Quarantine Inspector Port Eads:

I have consulted Gov. McEnery. He will maintain his proclamation by force if necessary. If steamer ——— attempts to enter the waters of Louisiana telegraph me immediately, in order that proper measures may be instituted. Warn all pilots and captains of towboats that if they disobey the proclamation of the Governor of Louisiana the Board of Health will take immediate measures for their arrest and punishment according to law. They are prohibited from piloting or towing any vessel from ports infected with yellow fever or Asiatic cholera. Report immediately any violation of proclamations of Board of Health and of Governor.

JOSEPH JONES, M. D.,
President Board of Health.

UNITED STATES MARINE HOSPITAL SERVICE AND SHIP ISLAND—RESOLUTIONS OF HON. I. N. MARKS, REAFFIRMING HIS PREVIOUS RESOLUTIONS ESTABLISHING NON-INTERCOURSE WITH PLACES INFECTED WITH YELLOW FEVER.

[Extract from proceedings of the Board of Health of the State of Louisiana, regular meeting, August 1883.]

Dr. John Godfrey, of the Marine Hospital Service, being present, was invited to speak as to the arrangements for the isolation of the Quarantine Station at Ship Island, under the control of his office.

Dr. Godfrey said that when the Marine Hospital Service took charge of the station at Ship Island it was intended to make it a refuge station for infected vessels, and to provide all the means and appliances under the most comprehensive and stringent regulations that experience and science had taught were necessary to guard the coast from the invasion of foreign infection.

Some time ago the Louisiana Board of Health had passed resolutions implying that there was uninterupted intercourse between the Quarantine Station at Ship Island and the coast of Mississippi. The speaker denied that there had been such intercourse since the station had been in charge of the Marine Hospital Service. The most thorough regulations for the isolation of the Quarantine Station had been in force all the time. At night all the boat oars on the infected ships were put under lock and key, so that desertions in small boats would be impossible. A patrol boat passes around the infected ships day and night, to intercept any attempt to communicate between the vessels and shore. No bedding, clothing or other articles of the kind were permitted to be cast into the sea from the ships. All such matter as was to be destroyed was conveyed ashore and burned, and clothing and other textiles that were to be disinfected were boiled thoroughly with cloride of lime. As to stories told of bedding found floating in the water along the Mississippi coast, he could say it did not come from the Quarantine Station or the vessels under detention at Ship Island. There is no intercourse except official, under strict regulations. The Marine Hospital Service has at its disposal ample means and these were being used under thorough and skillful management to fence out foreign infection from the ports of the country, and so far they have been used effectually.

Col. John W. Glenn, United States Superintendent of Public Buildings, said he had personal knowledge of the regulations in force at Ship Island Quarantine, and they were strictly and faithfully executed. He had the testimony of parties who had seen the floating mattresses complained of by some persons as having possibly been thrown from ships, and the information was obtained that they were not ships' mattresses, and were not of the sort used at sea. He explained also that there is a great difference between Ship Island station and Ship Island anchorage. The anchorage, which is several miles from the island, is a place were ships may lie in water of four or five fathoms in depth protected from the force of the open sea. This anchorage is resorted to by ships which cannot enter the shallow ports along the coast, and has nothing to do with the island and no connection with the quarantine fleet, which lies at the east end of Ship Isl.

The President expressed his entire confidence in the wisdom and efficiency of the Marine Hospital Service, and was sure it is accomplishing a good work in protecting the country from foreign disease. Since this service had become known to the public by its work there had been a greater sense of security and an almost complete absence of such sensational rumors as had obtained at this season in former years. Nearly every port on the coasts of the country had been threatened by yellow fever, but the thorough and prompt arrangements that had been made to meet it had been such as to win and justify public confidence in spite of the hostility of interested parties.

Dr. Formento said he had been the author of the resolutions implying that there was unrestricted intercourse between Ship Island and the adjacent coasts. He made the statement on the representations of Commodore Maginnis and Dr. Austin, but this intercourse might have taken place before the regulations of the Marine Hospital Service were put into execution. At any rate, he now has confidence in the service and faith in the strong arm of the Government as perhaps the only rightful authority competent to exercise and enforce quarantine on the coast.

Mr. Booth protested against the assumption by the last speaker that the State Government had no right to declare and enforce quarantine it its waters. He claimed this right for the States, but recognized the value of the General Government to settle questions where the interests of the States might not harmonize in matters of quarantine.

The President reported that the record of deaths showed sixty-seven deaths in the past four days, five of which are from small-pox and four from malarial fevers. Mr. Marks quoted Dr. Miles, House Surgeon at the Charity Hospital, for testimony as to the unusual freedom of the city from malarial fevers, and Dr Formento said the private practice of all the physicians in the city showed the same fact.

The President read several communications from Hon. Warner P. Sutton, U. S. Counsul General at Matamoros, Mexico, protesting against the quarantine restrictions against his city, which is healthy.

Letters were read from Messrs. G. Corral & Co. and others, asking that the Spanish steamer Gracia and the barks Angelita and Anna de Faura be allowed to come up to the city from quarantine, where they now are. Also from Smith Bros. & Co., asking a cargo of Mexican coffee on board the schooner Sidbury be permitted to be landed at quarantine and after disinfection be brought to the city.

Mr. Marks then ordered the following:

"Whereas, as a measure of full public safety for the health and lives of the people of Louisiana, the Valley of the Mississippi and the surrounding States, the Governor has issued a proclamation of non-intercourse with the yellow fever infected ports of Vera Cruz, Havana and Rio de Janeiro: and

Whereas, next in importance to the protection ef the health and lives of the people comes the preservation of the commerce, interstate and inland, of the city of New Orleans upon which during the summer months the commercial prosperity of this city depends;

And whereas, good faith to the Governor of this State, proper respect and regard to the expressed opinions of the commercial exchanges of New Orleans and undoubted security against the admission of foreign pestilence, imperatively demand that no vessel from a yellow fever infected port shall enter the harbor of New Orleans during this summer, load or unload at any of the quarantine stations of this State.

Be it therefore resolved That the President of this board be and is hereby instructed not to permit any vessel now in the waters of Louisiana, from any yellow fever infected port, either to load or unload cargo at any quarantine station of the State, or proceed from such station to the city of New Orleans."

Mr. Marks urged the importance of the emergency which required such action, and the great responsibility resting on this board.

Dr. Formento advocated admitting the vessels now at quarantine.

Mr. Marks' resolutions were adopted.

Mr. Booth offered a supplementary resolution specifying the names of the vessels now at quarantine as included in the prohibitory proclamation of the Governor, which was adopted.

A letter from the postmaster at New Orleans was read stating that a package of mail marked Buras, and bearing evidence of being foreign mail matter, had been received at the postoffice. It had been referred to Dr. Finney, quarantine officer at the Mississippi Station. His reply was read, stating that this mail consisted of letters written by two acclimated and healthy passengers of the schooner Sidbury, from Tampico. The foreign mail brought by the Sidbury is still in the ship detained at quarantine.

The board then adjourned.

NEW ORLEANS, September, 7, 1882.

His Excellency Samuel D. McEnery, Governor State of Louisiana, Baton Rouge, La.:

Dear Sir—I have the honor herewith to enclose resolutions unanimously adopted by the Board of Health of the State of Louisiana, at the regular meeting, September 6

1883, requesting your Excellency to withdraw the Quarantine Proclamation of July 24, said withdrawal to take effect on the fifteenth of September, 1883; the original proclamation of the fourth of April remaining in full force.

The thanks of the State Board of Health of Louisiana are respectfully tendered to your Excellency for thorough co-operation with the Board, and for the firm maintenance of the quarantine laws of Louisiana.

Respectfully, your obedient servant, JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

COPY OF RESOLUTIONS BOARD OF HEALTH, STATE OF LOUISIANA.

By Mr. Marks:

Whereas, in the month of July last, it became necessary for the preservation of the health and lives of the people of Louisiana the surrounding States and the Mississippi Valley, to proclaim non-intercourse with yellow fever infected ports of Havana, Rio de Janeiro and Vera Cruz; and

Whereas, this measure was not only demanded by the exigencies of the situation, but was imperatively called for by the various commercial representative bodies of New Orleans; and

Whereas, believing that the period has been reached, with the close of summer, when commerce with the proclaimed ports can be relieved from the rigorous, though necessary, interference to which it has been subjected; be it therefore

Resolved, That the State Board of Health of Louisiana respectfully request his Excellency Governor S. D. McEnery to withdraw his proclamation of non-intercourse of July 24, 1883; leaving in full force the proclamation of detention previously issued.

Resolved, That the thanks of the State Board of Health of Louisiana be and they are hereby tendered to his Excellency Samuel D. McEnery, Governor of Louisiana, for his thorough co-operation with this Board, and for his firm maintenance of the quarantine laws of Louisiana.

A true copy.

S. S. HERRICK, M. D.,
Secretary Board of Health, State of Louisiana.

EXECUTIVE DEPARTMENT STATE OF LOUISIANA.

Whereas, at a regular meeting of the Board of Heath of the State of Louisiana held in the city of New Orleans on the sixth day of September, 1883, the following resolution was adopted:

"That the State Board of Health of Louisiana respectfully request His Excellency Samuel D. McEnery, to withdraw his proclamation of 'non-intercourse' of July 24, 1883, on the fifteenth instant, leaving in full force the proclamation of detention previously issued."

Now, therefore, I, Samuel D. McEnery, Governor of the State of Louisiana, by virtue of the authority in me vested by law, and in pursuance to the above resolution, believing that the period has been reached, with the close of summer, when commerce with the proclaimed ports can be relieved from the rigorous, though necessary, interference to which it has been subjected do hereby withdraw my proclamation of non-intercourse of July 24, 1883, said withdrawal to take effect on the fifteenth instant, the original proclamation of the fourth day of April, 1883, remaining in full force and effect; and the quarantine officers at the quarontine stations are specially charged and directed to enforce strictly its execution, and the Board of Health is requested to prosecute vigorously all violations of the same.

Given under my signature and the seal of the State of Louisiana, at the city of Baton Rouge, on this eighth day of September, A. D., 1883.

(Signed) S. D. McENERY,

By the Governor:

WILL. A. STRONG, Secretary of State.

NEW ORLEANS, September 12, 1883.

His Excellency Samual Douglas McEnery, Governor State of Louisiana, State Capitol Baton Rouge, La.

Dear Sir—I have the honor to acknowledge the letter of your Excellency of the eighth instant, enclosing copy of note from the diplomatic representative of Spain, communicating the complaint of parties interested against the Board of Health of the State of Louisiana; also letter of Hon. John Davis, Acting Secretary of State, bearing date Washington, D. C., September 9, 1883.

In accordance with the request of your Excelleucy, I herewith return the said documents; and also present the enclosed copies of the acts of the Board of Health, relative to the Spanish brig Ana Faura, the Spanish Corvette Angelita, and the Spanish steamer Gracia.

(a). Certificate of arrival of brig Ana Faura and ship Angelita.

(b). Certificate of arrival of steamship Gracia.

(c). Permission to coal steamship Gracia.

(d). Authority to coal steamship Gracia at Port Eads, under direction of Dr. Hart.

(e). Certificate issued by President of Louisiana Board of Health to brig Ana Faura.

(f). Certificate issued by President Louisiana Board of Health to steamship Angelita.

(g). Communication to Dr. Finney, Resident Physician Mississippi Quarantine Station.

(h). Extracts from minutes of Board of Health. Resolutions adopted August 3, 1883.

(i). Extracts from minutes Board of Health, August 3, 1883.

(j). Letter of President Louisiana Board of Health to Hon. Pedro de Solis, Consul of Spain, August 4, 1883.

(k). Letter of President Louisiana Board of Health to Messrs. Miller and Finney attorneys at law, August 4, 1883.

(l). Letter from His Excellancy S. D. McEnery, Governor of Louisiana, to President Board of Health, July 23, advising the policy of non-intercourse.

(m). Extracts from minutes of meeting of Board of Health, July 23, 1883. Action, with reference to non-intercourse with infected ports.

(n). Extracts from minutes of meetings Board of Health, August 2, 1883, with reference to interpretation of non-intercourse proclamation; also with reference to steamship Angelita, steamship Gracia and brig Ana Faura.

(o). Additional quarantine proclamation of His Excellency S. D. McEnery, July 24, 1883.

(p). Original proclamation of His Excellency S. D. McEnery, April 4, 1883.

(q). Proclamation of His Excellency S D. McEnery, September 8, 1883, withdrawing non-intercourse proclamation of July 24, 1883.

(r). Reports of conference committee of Board of Health, with reference to British steamship Plessy, refused entrance to mouth of Mississippi, August 29, 1883.

(s). Report of meeting of Board of Health, July 23, 1883; action on non-intercourse by Board of Health and commercial bodies.

(t). Extract from minutes of Board of Health, September 6, 1883, requesting His Excellency S. D. McEnery to withdraw proclamation of non-intercourse. In response to the request of your Excellency that I should present my views as to the action of the Board of Health with reference to the vessels specified by the Spanish Ambassador, I beg leave to submit the following in addition to the inclosed papers – a–t.

1. The following facts are well established and will apply to the proclamation of July 29, 1883, excluding vessels from ports infected with yellow fever and Asiatic cholera from the waters of Louisiana, and to all acts of a similar character which may in the future be demanded for the preservation of the public health.

(a). Quarantine regulations and restrictions relate to the preservation of the health and lives of the people, and are based upon the evident and inalienable right of self-preservation. The duty of each State to protect its citizens from the importation of foreign pestilence is clear and imperative.

(b). The State of Louisiana has recognized these principles, and in her sovereign capacity has enacted laws and commissioned the proper officers, including the Chief Executive of the State, and the members of the Board of Health, duly confirmed by the General Assembly, and sworn to support the laws of Louisiana and of the United States, for the express purpose of exercising the police powers of the State for the exclusion of foreign pestilence and the protection of the health and lives of the people.

(c) The power to establish and enforce quarantine regulations had been exercised by the individual colonies, and has never been surrendered to the General Government.

2. The establishment and enforcement of quarantine, and even the absolute exclusion of infected ships and ships from infected ports, is not a regulation of commerce in violation of the Federal Constitution and of foreign treaties; but it is simply the exercise of their police powers by the individual States which are inalienable, and which have not and which cannot be surrendered to the General Government, and which cannot be disregarded or violated by any domestic or foreign power.

3. In accordance with section four of "An act Supplementary to an Act Entitled 'An Act Relative to Quarantine,'" approved March 18, 1858, "In case of emergency the Board of Health shall have power to issue proclamation of quarantine without reference to the Governor, and to enact all needful regulations for the enforcement of the same."

By the act of March 29, 1876, the time of quarantine detention was left discretionary with the Board of Health; the time of detention might be just sufficient for inspection, or it might be ten or twenty or 100 days.

By the act of April 30, 1877, "To Reorganize and Render More Efficient the Board of Health of the State of Louisiana." etc., section 17, it is ordained that the Board of Health "shall have power and authority to establish quarantine stations upon any of the approaches to the city of New Orleans whenever, in its discretion, such stations may be rendered necessary to protect the health of the city of New Orleans or the State, and to make all needful rules and regulations with reference to the management and police of such stations.

In virtue of the preceding organic acts of the General Assembly, the Board of Health of the State of Louisiana has established quarantine stations at the most important points on the confines of Louisiana, viz., Port Eads and the mouths of the Mississippi; English Lookout, on the borders of Mississippi.

At both stations ships, passengers and railroad trains are admitted or excluded from the limits of the State, in accordance with the orders of the Board of Health.

No infected person or ship is allowed to enter the State.

During the non-intercourse proclamation, at the mouths of the Mississippi River, vessels from ports infected with yellow fever were allowed to ride at anchor in the waters of the Gulf, to proceed to any port they may desire, and all the necessary wants were supplied under the supervision of the officers of the Board of Health, but in this time of danger and peril they were not allowed to jeopardize the health of the State and of the Valley of the Mississippi by entering the waters of Louisiana.

4. The right to exclude vessels from infected ports, for the protection of the public health is recognized and practiced by all civilized nations, and by no nations more freely than Spain and England.

At the present moment Egypt and the neighboring countries of Europe and Asia and Africa, furnish examples of the most despotic and rigorous systems of non-intercourse for the arrest of asiatic cholera, and the Spanish government has called loudly upon England for the enforcement of the most rigorous measures of quarantine and non-intercourse.

Numerous examples might be cited of the exercise of forcible protection against contagion, but the following will illustrate the mode in which States have dealt with infected ships and towns.

In 1748, the Adam, a Dutch ship, carrying rice from Damietta to Marseilles, was cast on the shore of the Island of Majorca in a tempest. The inhabitants (Spaniards) refused to permit the crew to land, as they feared the plague, from the fact of the ship sailing from the Levant. As the ship could not be removed, the Spaniards set her on fire, having previously furnished the crew with five boats, in which to save themselves and part of the cargo.

In 1719, the captain of the Grand Saint Antoine, a French ship, returning to Marseilles from the Levant, and having lost some of his crew from the plague, fraudulently pretended that they had died of bad provisions, and neglected to go into quarantine. This cruel fraud was the cause of the death of half the inhabitants of the city. By order of the Minister the vessel was burnt.

When Valetta was attacked by the plague, in 1813, Sir Thomas Maitland ordered a *cordon sanitaire* to be drawn around the town, and every person who attempted to pass to be shot.

5. The action of the Board of Health of the State of Louisiana, in excluding vessels from ports infected with yellow fever from the waters of Louisiana, was taken at a time when yellow-fever stricken ships were scattered along the Atlantic and Gulf coasts and the State of Louisiana and the entire Mississippi Valley were menaced by yellow fever.

By the exclusion of vessels from the City of New Orleans, which had sailed from infected ports, Havana, Vera Cruz and Rio de Janeiro, commerce was protected, and the health of Louisiana and the Mississippi Valley protected by the exclusion of yellow fever.

The Spanish marine and nation have been and will be benefited by the prompt and energetic action of the health authorities of Louisiana.

With great respect and high esteem, I have the honor to remain your obedient servant,

JOSEPH JONES, M. D.

President Board of Health, State of Louisiana.

MISSISSIPPI QUARANTINE STATION—REPORT OF DR. FINNEY, 1883.

QUARANTINE STATION, MISSISSIPPI RIVER,
Louisiana, January 3, 1884.

To the Hon. President and Members of the Louisiana State Board of Health, New Orleans, La.:

Gentlemen—I would respectfully submit the enclosed report of the work done at station during the year ending December 31, 1883. In addition to the repairs suggested by me in my last annual report, and which have not been made so far, I would ask that the present wharf and boat-house be extended at least sixty feet further into river, as at present it is impossible, in low river, to get near the boat-house in our

Speaking of boats, I think, in the interests of the shipping and to facilitate the work at this station, your honorable body could not invest money to better advantage than in purchasing a suitable steam launch for the purpose of boarding vessels with and for making the necessary daily inspection of the fleet that is in quarantine during the summer months. During the past summer I had as many as fourteen vessels in quarantine at one time. These vessels must have a good and safe anchorage, and consequently have to be some distance apart. That being the case, it is impossible to make a daily inspection of so many vessels and perform the other necessary duties of boarding, disinfecting and fumigating with a boat propelled by oars. I would also ask that you gentlemen allow this station a druggist, who should act as hospital steward as well. Hoping you will take action in these matters as soon as possible,

I remain your obedient servant.

J. F. FINNEY, M. D.,
Resident Physician.

TABLE NO. 1.—RFPORT OF VESSELS BY MONTHS PERMITTED TO PASS THE MISSISSIPPI RIVER QUARANTINE STATION WITH THE AMOUNTS COLLECTED AND CLASSIFICATION OF VESSELS.

MONTHS.	Steamship.	Sail Ships.	Barks.	Brigs.	Schooners.	Steam Tugs	Total.	Tax Fees.	Fumigation Fees.	Total Fees.
January	62	8	25	3	14	0	112	$2,195 00	.....	$2,195 00
February	57	7	30	2	16	0	112	2,180 00	.....	2,180 00
March	82	5	14	4	16	0	121	2,315 00	.....	2,315 00
April	59	4	32	4	16	1	116	2,180 00	.....	2,180 00
May	53	1	12	5	21	0	92	1,647 50	$533 00	2,180 50
June	36	0	7	2	11	4	66	922 50	316 00	1,238 50
July	32	1	4	2	7	1	47	752 50	305 00	1,057 50
August	29	0	2	3	10	0	44	565 00	99 00	664 00
September	57	2	1	0	6	0	66	1,355 00	224 00	1,579 00
October	76	4	10	1	13	0	104	2,167 50	470 00	2,637 50
November	62	10	25	4	17	0	118	2,227 50	.....	2,227 50
December	82	4	32	4	10	1	133	2,860 00	.....	2,860 00
Total	687	46	194	34	157	7	1,125	$21,367 50	$1,947 00	$23,314 50

TABLE NO. 2.—REPORT OF VESSELS QUARANTINED AT MISSISSIPPI RIVER QUARANTINE STATION BY MONTHS AND CLASSIFICATION OF VESSELS.

MONTHS.	Steamships.	Sail Ships.	Barks.	Brigs.	Schooners.	Steam Tugs.	Total.	
May	17	1	4	4	2	0	28	
June	8	0	6	2	8	2	26	
July	9	1	4	1	3	0	18	July 24, non-intercourse proclamation.
August	3	0	0	2	0	0	5	
September	9	0	0	0	2	0	11	September 12, non-intercourse proclamation modified to ten days detention.
October	16	1	5	1	3	0	26	
Total	62	3	19	10	18	2	114	

TABLE NO. 3—REPORT OF PORTS QUARANTINED, WITH NUMBER OF VESSELS FROM EACH, BY MONTHS.

Port.	May.	June.	July.	August.	September.	October.	Total.
Havana	15	7	10	.....	1	10	43
Vera Cruz	4	5	5	.....	1	4	19
Colon	3	2	3	2	3	4	17
Campeche	2	5	.....	1	2	1	11
Barbadoes	1	3	.....	.....	.....	4	8
Tampico	2	.....	.....	.....	1	.....	3
Port de France	.....	2	.....	.....	.....	1	3
Kingston	.....	.....	.....	.....	.....	1	1
Matanzas	.....	.....	.....	.....	1	.....	1
Pernambuco	1	.....	.....	.....	.....	.....	1
Porto Rico	.....	.....	.....	.....	.....	1	1
Progresso	.....	.....	.....	1	1	.....	1
Samana Bay	.....	1	.....	.....	.....	.....	1
St. Lucca	.....	.....	.....	.....	1	.....	1
St. Thomas	.....	.....	.....	1	.....	.....	1
Trinidad	.....	1	.....	.....	.....	.....	1
Total	28	26	18	5	11	26	114

INSPECTION OF SHIPPING IN PORT OF NEW ORLEANS, 1883.

NEW ORLEANS, November 1, 1883.

Dr. Joseph Jomes, President Board of Health, State of Louisiana:

I respectfully submit the following report, as Deputy Inspector of Shipping for the port of New Orleans, from May 1 to November 1, 1883.

DATE—1883.	Number Vessels Inspected.	Number of Seamen.	Number of Passengers.	Total Seamen and Passengers.
May	73	1,636	271	1,907
June	65	1,285	340	1,625
July	50	1,032	272	1,304
August	43	908	230	1,138
September	58	1,570	490	2,060
October	62	1,740	240	1,980
Totals	351	8,171	1,843	10,014

All vessels along the river front and water-craft in the New and Old Basins have been found in a uniform cleanly condition, and the health of the men composing the crews of vessels in this port has been good. No case of contagious or infectious disease has occurred in the shipping up to date.

Very respectfully,

STANHOPE JONES, M. D.,
Deputy Inspector of Shipping Port of New Orleans.

ATCHAFALAYA QUARANTINE STATION—REPORT OF DR. WISE, 1883.

MORGAN CITY, LA., November 1, 1883.

To the President and Members Louisiana State Board of Health:

Gentlemen—I have the honor to submit the following report of my action at the Atchafalaya Quarantine Station during the past season:

On the fifth day of April last, in company with Dr. Joseph Jones, the President of the State Board of Health, I visited the Quarantine grounds, and together we selected a site for a warehouse and wharf, situated upon the school lands, the property of the state of Louisiana, upon the right bank of the Atchafalaya near Wax Bayou. The plans for the same were approved, and the building erected the same month, together with a substantial wharf. These improvements were very necessary, as during the past few years the boatman at the station had no shelter, neither was there any provision made for the care of sick.

During the season I have issued permits to two hundred and thirty-three vessels, as will be seen in the tabulated statement hereto annexed.

But two vessels were detained at the Quarantine station during the past season, viz., the schooners Millie Williams and Mary E. Clarke, both from Tampico. No sickness occurred on board at any time from date of departure from Tampico until they were released. They were detained ten full days, thoroughly cleansed and disinfected.

One case of small-pox was removed from the tugboat S. C. Hall, from New Orleans. The case was isolated and provided with a nurse, as directed by the board. The man died on the third day.

I have found it impossible to collect the quarantine fees from vessels not quarantined. Many ship masters have expressed a willingness to pay nominal fees to cover expense of boarding, etc., but as I was not authorized to accept any other than full dues, it was declined.

The quarantine property is in good order, and I would recommend the employment of a keeper during the winter, otherwise the property may be carried away or destroyed.

A plain substantial fence is also necessary.

In conclusion, I desire to call your attention to the growing importance of this station. The rapidly increasing lumber trade with Mexico from this port will necessitate the exercise of great vigilance every season, and the same may be said of "Calcasieu Pass," the outlet of the Lake Charles region.

I append a tabulated statement of all vessels arrived during the past season, and an inventory of property, supplies, etc., on hand.

I am, gentlemen, very respectfully,

J. H. P. WISE, M. D.,
Resident Physician, Atchafalaya Station.

REPORT OF VESSELS ARRIVED DURING SEASON 1883.

MONTHS:	Steamships.	Schooners.	Total Vessels.	Total Tonnage.	Crew.	Passengers.	Total Number Persons.	TOTAL. Fees due.	TOTAL. Fees Collected.
May	23	24	47	18,447.84	867	304	1,171	$855 00	$7 50
June	25	18	43	18,552.07	863	309	1,172	862 50	.....
July	19	31	50	15,598.29	727	193	920	720 00	15 00
August	15	27	42	11,015.41	585	191	776	645 00	.....
September	9	14	23	6,096.45	283	104	387	302 00	.....
October	12	16	28	9,276.02	455	303	758	493 00	.....
Total	103	130	233	78.986.08	3,780	1,404	5,184	$3,877 50	$22 50

REPORT OF VESSELS QUARANTINED SEASON 1883.

DATE.	Name.	Class.	Where from	Days out.	Bill health.	Crew.	Passengers.	Sanitary condition.	Remarks.
May 14	Millie Williams.	Schooner.	Tampico.	8	Clean.	7	2	Good.	Ten days.
June 25	Mary E. Clarke.	Schooner.	Tampico.	6	Clean.	6	12	Good.	Ten days.

INVENTORY OF MOVABLE PROPERTY AT ATCHAFALAYA QUARANTINE STATION, OCTOBER 31, 1883.

One yawl boat, in good repair.
One pair oars.
Two cot-beds.
Two furnaces.
Two iron pans.
One lot kitchen utensils.
One yellow flag (worn).
One piece yellow bunting.
Nine and one half barrels copperas.
Two barrels roll sulphur.
Thirty gallons carbolic acid.

I certify that the above is a correct inventory of movable property on hand at Quarantine Station.

J. H. P. WISE, M. D., Resident Physician.

REPORT OF W. H. CARSON, M. D., QUARANTINE INSPECTOR OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA, AT ENGLISH LOOKOUT, LA. (ON THE LOUISVILLE AND NASHVILLE RAILROAD AND ON EAST PEARL RIVER, THE SOUTHEASTERN BOUNDARY LINE OF THE STATE OF LOUISIANA.

NEW ORLEANS, La., October 5, 1883.

To the President and Members of the Board of Health, State of Louisiana:

Gentlemen.—I have the honor to submit the following as my official report of the "Quarantine Season," commencing at English Lookout Station, on May 15, and ending October 1, 1883:

On the date of receiving my commission, May 14, 1883, I received the following written instructions from President Joseph Jones, with orders to execute them in obedience and in accordance with the powers of the Board of Health of the State of Louisiana.

1. Boarding and inspection of oil vessels entering English Lookout.

2. All vessels from infected ports must be directed to report to the Louisiana Quarantine Station, on Rabbit Island, Rigolets.

3. Dr Carson will report all violations of the quarantine laws of Louisiana to the President of the Board of Health. He will also communicate all facts of importance relating to vessels from infected ports included in the Governor's Proclamation, to Dr. Adams, Resident Quarantine Officer at Rigolets.

4. Dr. Carson will report promptly to the President of the Board of Health any entrance of a vessel from an infected port into the waters of Mississippi.

5. Dr. Carson will also hold supervision over the railroad trains, and allow no passengers or baggage from an infected port to enter Louisiana.

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

In accordance with these instructions, twenty-four vessels were boarded, and their crews, numbering 11[illegible] men, were inspected up to the closing of the station. October 1, 1883

These vessels, the great majority of which were schooners, were engaged in the carrying of lumber from mills in the interior and adjacent to Pearl River (East) to foreign vessels lying in Mississippi Sound. The great danger to be feared was the possible intercourse or contact, direct or indirect, of these vessels with the infected shipping undergoing quarantine at the Ship Island Quarantine Station. It is proper to state, however, that I never had any ground for suspicion that any such intercourse occurred or was probable during the administration of quarantine regulations by the United States Marine Hospital Service. Notwithstanding, all vessels on their return were rigidly inspected and attended to before going up East Pearl River to the interior country.

None of these vessels engaged in lightering required any long detention, nor was there any case of sickness that came under my observation, and I am reliably informed that no disease of a contagious or infectious nature occurred in the interior country that could be attributed to their intercourse with outside shipping.

It is to the credit of Messrs. Poitevent & Favre, of Pearlington, Miss., extensive mill owners on East Pearl River, that they gave every assistance in the furtherance of our quarantine regulations, and whose vessels were at all times extremely careful to avoid ships on the outside whose health status and ports of clearance were not known. I was at all times well informed as to name, location and health of the vessels that they were having intercourse with.

On the seventh of July, 1883, a detail of two sanitary officers was ordered by President Jones to report for duty at English Lookout, and under the following instructions:

1. To aid Dr. W. H. Carson in the execution of the following labors ordered by the board:

(a). Fumigation of vessels.

(b). Inspection of all trains passing from Mississippi into Louisiana.

The inspectors should, in order to avoid interrupting travel, proceed on the out-bound train as far as necessary, say to Pascagoula, Biloxi, or Bay St. Louis, and return with the train bound for New Orleans and inspect the passengers.

(c). When passengers have been subjected to proper quarantine detention at the regular quarantine station, and their baggage fumigated, they may be allowed to proceed to New Orleans at the discretion of the quarantine officer, said discretion being exercised as to the efficiency of the quarantine and actual state of the passenger.

(d). The Board of Health of the State of Louisiana demand that the inspector at English Lookout exercise the utmost vigilance, and allow no passengers or seamen to enter the State of Louisiana, who have left an infected port, in any vessel, whether infected or not, and without having been subjected to quarantine.

(e). Furnish this board with written weekly, and if necessary, daily reports.

Also telegraph at once any evasion of quarantine and any point of interest.

(Signed) JOSEPH JONES, M. D.,
President Board of Health

In accordance with these instructions all trains, both passenger and freight were subjected to a [illegible] thorough inspection. The evening express was boarded at Bay St. Louis, Miss., about thirty miles distant and beyond English Lookout, thus affording the quarantine officials ample time to satisfactorily examine train.

In this branch of the service we were at all times courteously and efficiently assisted by the railroad authorities, in their respective departments, of the Louisville & Nashville Company. On several occasions passengers by rail, en route to New Orleans, were discovered as having come from proscribed ports and localities, and, with but one exception, left the train graciously to seek, for the time being, some more hospitable and appreciative locality.

All morning trains were inspected at the quarantine station (English Lookout); the way bills, the [illegible] and caboose of freight trains all received a close examination.

It cannot be doubted, from the above retrospect, that the selection of this locality as a quarantine inspection station was most judicious.

The satisfactory and gratifying results of the season just closed, as well as its previous though short season in 1882, the year of its inaugural, go far to substantiate its importance.

In conclusion, it affords me pleasure to commend the promptness, energy and intelligence manifested by your detail of sanitary officers L. D. Allen and Bohner in the discharge of their fatiguing duties.

I also take occasion to specially acknowledge the manifold courtesies on the part of Captain A. V. [illegible] the United States customs officer at English Lookout, La., with whom I had pleasant quarters during season, and to whom I was oftentimes indebted for assistance in the boarding of vessels.

I am, sir, very respectfully, your obedient servant;

W. H. CARSON, M. D.,
Quarantine Inspect[illegible]

INFECTED VESSELS FROM RIO.

The discharge of the cargoes of coffee ships from Rio, was conducted by order of [illegible] Board of Health during the years 1880, 1881, 1882 and 1883. This course was necessit[illegible] by the presence of yellow fever in Rio during this period, as will be seen from the re[illegible] of the United States Consul General of Rio.

CONSULATE GENERAL OF THE UNITED STATES.
Rio de Janeiro, Brazil, January 30, 1884.

Dr. Joseph Jones, President State Board of Health, New Orleans -

Dear Sir—Your esteemed favor of October 12, was duly received as also a copy of the annual report of Board of Health Louisiana, 1882–3, for which I am very thankful; but I would be glad of a copy for the succeeding year. I delayed sending your return of deaths from yellow fever, that I might give them complete for 1883; and I now beg to hand you a table showing the number of deaths from that disease in this city each year since and including 1850. However, I am able to give them for each month only from and including 1873. And the deaths from all causes, I am able to give only from and including the year 1872. If I can secure any official medical publications I will send them to you. I send you regularly, a monthly report of the mortality in this city, which I hope is duly received.

Very respectfully, yours, C. C. ANDREWS, Consul General.

REPORT OF DEATHS FROM YELLOW FEVER AT RIO DE JANEIRO, EMPIRE OF BRAZIL.

The following table gives the number of deaths from yellow fever, 1850–1883, inclusive (thirty-four years), and shows the same by months since and including 1872; also shows the total number of deaths from all causes since and including 1879:

U. S. CONSULATE GENERAL,
Rio de Janeiro, January 8, 1883.

Years.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October,	November.	December.	Total from all Causes.	Total, Yellow Fever.
1850	..	....	....	....	....	....	....	....	....	....	....	....	.....	4160
1851	....	....	....	....	....	....	....	....	....	....	....	....	.....	475
1852	....	....	....	....	....	....	....	..	....	....	....	....	.....	1943
1853	....	....	....	....	....	....	....	....	....	....	....	....	.....	853
1854	....	....	....	....	....	....	....	....	....	....	....	....	.....	21
1855	....	....	....	....	....	....	....	....	....	....	....	....	.....	....
1856	....	....	....	....	..	....	....	....	....	....	....	....	.....	...
1857	....	....	..	....	..	....	....	....	....	....	..	....	.....	1425
1858	...	....	....	....	....	....	....	....	....	....	....	....	.. ....	....
1859	....	....	....	....	....	....	....	....	....	....	....	....	.....	500
1860	....	....	....	..	....	....	....	....	....	....	....	....	.....	1249
1861	....	....	....	..	....	....	....	....	....	....	....	....	.....	247
1862	....	....	....	....	....	....	..	....	....	....	....	....	.....	12
1863	....	....	..	....	....	....	....	....	....	....	....	....	.....	....
1864	....	..	....	....	....	....	..	....	....	....	....	....	.....	...
1865	..	....	....	....	..	....	....	....	....	....	....	....	.....	....
1866	....	....	....	....	....	....	....	....	....	....	....	....	.....	....
1867	....	....	....	....	....	....	....	....	....	....	....	....	.....	....
1868	....	....	....	....	....	..	....	....	....	....	....	....	.....	....
1869	....	....	..	....	....	....	....	....	....	....	....	....	.....	....
1870	....	..	....	....	....	....	....	....	....	....	....	....	....	272
1871	....	....	....	....	....	....	....	....	....	....	....	....	.....	1117
1872	1	....	..	..	1	3	1	...	1	8	16	71	.....	102
1873	889	1087	008	575	180	83	20	3	2	5	2	13	.....	3467
1874	16	51	168	297	165	69	25	5	1	6	10	13	.....	826
1875	23	168	385	301	244	104	36	10	5	4	3	8	.....	1291
1876	122	319	1357	946	375	129	41	12	6	4	4	2	.....	3317
1877	3	10	39	23	22	11	4	15	7	8	18	53	.....	213
1878	77	326	264	99	42	19	18	4	8	10	2	11	.....	880
1879	127	204	226	160	69	53	42	26	11	8	9	18	10,556	950
1880	150	489	465	268	103	48	18	8	5	5	10	14	11,057	1583
1881	31	54	43	25	24	13	13	6	1	2	4	3	9,875	219
1882	2	3	11	13	6	3	1	....	....	...	...	...	10,305	39
1883	8	84	325	542	274	107	65	31	12	5	12	29	13,092	1494

C. C. ANDREWS, Consul General.

With the terrible experience of the past, it is evident that in a city situated on the borders of the Gulf of Mexico, between the twenty-ninth and thirtieth degrees of north latitude, separated by only a few hours' steam navigation from the great centres charged with the perennial development of yellow fever, quarantine laws must be rigid, and must be adapted to the geographic, topographic and climatic conditions and relations.

The first object of importance in this inquiry relates to the geographical position, climate and medical history of Rio de Janiero, as far as it relates to yellow fever.

The city of St. Sebastian, or, as commonly called, the city of Rio de Janeiro, dates its foundation from about the middle of the sixteenth century. It is now the oldest as well as the largest city in America south of the equator, and is computed to have at the present time a population of 330,000 inhabitants.

This city, the capital of Brazil, is situated in latitude 22° 55′ south, and longitude 43° 09′ west from Greenwich, on the western shores of an extensive bay, the extreme diameter of which is about twenty miles, more or less. This sheet of water is pear-shaped, and broken in many places by islands of considerable size. The background is formed of precipitous mountains, varying in height from 1500 to 3000 feet, and clothed with the luxuriant vegetation of the tropics. Its geographical position makes it a commercial centre for trade with India, Oceanica, South America and Europe. Ships of almost every nation are found, in the course of a year, landing or unloading cargoes at this port.

The site of the city is a marshy plain, studded by lofty hills of granite or granitic gneiss. When the city was commenced, on the Punta Calabouca, the vicinity was almost constantly overflowed by pools of stagnant water, which was supposed to be prejudicial to the general health of the population. Intermittent fever prevails at all seasons along the shores and upon the islands of the bay, especially among those of the population who are imperfectly nourished and sheltered. Occasionally it is severe and fatal in its effects.

Placed immediately beneath the tropic of Capricorn, Rio de Janeiro is under all the climatic influences common to equatorial and intertropical regions.

The granite hills around the city, as well as the expanded surface of the bay, constitute reflectors of the caloric rays which augment the temperature and humidity. The atmosphere is more or less impregnated with vapors, and sometimes covered with clouds which hang about the mountain peaks, and cause on some days a suffocating heat, called by Brazilians *mormaco*—a sultry time—which is so debilitating as to deprive one of the appetite for intellectual or muscular exercise, as well as the powers of digestion, and lead to a belief that the temperature is much higher than indicated by the thermometer.

CLIMATE OF RIO DE JANEIRO.

Meteorological observations made during thirty years by Benito Sanchez Dorta, in the last century, show that the annual mean temperature of Rio de Janeiro was 73°04, while the more recent hourly observations of A. M. de Mello, made during the present century show an annual average increase of 2°11, the temperature for the year being now 75° 151.

This augmentation of the annual mean temperature is attributed to the clearing of the forests in the interior and in the vicinity of the city, which not attracting rain as frequently as formerly, the atmosphere and earth are not washed as often by summer showers; besides, the land wind not receiving exalations from the multiplicity of the leaves, the air is not so much freshened as when the forests were abundant, and for this reason it is supposed that the temperature has been greater.

The mean annual temperature of New Orleans is 69°48.

The mean summer temperature of New Orleans is 82° 53; of Havana, 84° 2; of Vera Cruz, 81°5.

The average spring and winter temperature of those places in which yellow fever is said to be indigenous or perennially present, are as follows:

Havana, Cuba: Spring, 75° 7; winter, 68° 4; Kingston, Jamaica: spring, 78° 1; winter, 76° 1; Matanzaa, Cuba: spring, 78° 9; winter, 73° 4; Nassau: spring, 77° 7; winter, 70° 7; Rio de Janeiro: spring, 74° 7; winter, 70° 1; Vera Cruz, Mexico: spring, 77° 8-7; winter, 77° 79-8.

In New Orleans, on the other hand, the average temperature of spring is 69° 58, and 12 degrees above that of winter, 57° 04.

It will be noted from the preceding data that the annual mean temperature of New Orleans is about six and a half degrees colder than that of Rio de Janeiro. The winter in New Orleans is marked by far lower temperature, the average temperature being 57° 04, while the average mean temperature of the winter in Rio Janeiro ranges about 70° 01. The winters of New Orleans are invariably cold enough to arrest yellow fever.

On the other hand, the winters of Rio de Janeiro are not sufficiently severe to arrest yellow fever. Hence this disease may prevail during every month of the year, as it does in Havana, the climate of both places being in their relations to health and yellow fever similar.

MORTALITY OF THE CITY OF RIO DE JANEIRO FROM YELLOW FEVER DURING THE YEARS SPECIFIED.

	1850.	1851.	1852.	1880	1881.
January	11	243	150	133	31
February	37	70	176	484	54
March	60	303	142	468	44
April	165	403	153	274	23
May	98	325	82	105	24
June	28	189	73	55	13
July	9	93	26	No report.	9
August	7	62	29	9	5
September	4	62	7	4	1
October	19	37	7	No report.	2
November	26	47	6	No report.	No report.
December	8	109	2	14	No report.
Total	475	1943	853	1546	206

The reports for 1882 have not yet been completed, owing to the length of time necessary for their transmission; but to the date of the last report, in July, deaths from yellow fever have occurred during every month.

It follows from the preceding facts that yellow fever prevails during every month in the year in Rio de Janeiro.

It is evident that during the past three years the port of Rio de Janeiro has been dangerously infected with yellow fever, and that deaths from yellow fever have occurred in every month.

Dr. Candido asserts that the dwellings of Rio de Janeiro, in a majority of instances, are better adapted to Lapland or Greenland than to the tropic region.

They are erected in rows, often upon a level below that of the streets and gardens. Their dimensions are small. The roofs of tile are low; often a wooden floor rests upon a damp soil, and is constantly in a state of decay. They are badly lighted and illy ventilated.

In the houses of the opulent are spacious saloons which are reserved for the reception of guests, while the wealthy inhabitants sleep in a close alcove covered with mosquito nets or bars. The walls are covered with paper which retains the humidity of the air.

In the greatest yellow fever epidemic of this city, New Orleans was without a Board of Health, and the quarantine restrictions practically valueless; therefore, the exact origin of this epidemic has been a matter of dispute, but it was established by the testimony of Mr. Lonsdale, one of the largest dealers in coffee, that nearly all the vessels that arrived here from Rio, after the first of April, 1853, had suffered more or less from yellow fever after leaving that port.

Thus the ship Siri, Capt. Higgins, arrived at New Orleans on the tenth of May, and took position at post 13. The captain had lost his wife, son and some of the crew before leaving Rio. The ship Mary Kendall arrived from Rio on the twenty-fifth of June, via Jamaica, where she had put in on account of distress from yellow fever; she left Rio on the twenty-fifth of January.

The origin of the epidemic has also been referred to the ship Camboden Castle, from Kingston, Jamaica, which arrived at New Orleans on the seventeenth of May, 1853, and took position at post 27. It is evident, however, that the arrival of the infected ship Siri, from Rio de Janeiro, was some days in advance of the Camboden Castle.

The public safety demands that cargoes from this port should be deemed infected, and as subject to fumigation, aeration or disinfection.

The climate of Rio de Janeiro cannot enjoy the reputation of being very salubrious, on account of its tropical position, the nature of the locality and the mode in which the houses of the masses of the people are built. Paludal fevers, of the intermittent and remittent form, sometimes complicated with ataxic or adynamic phenomena, cause the greater part of the mortality, principally after the evaporation of the waters of summer, ordinarily in the months of February, March and April.

A comparison of the present sanitary condition with that of more remote periods shows an increase of phthisis, diarrhœa, scarlatina, typhoid, pernicious and malarial fevers and yellow fever. Some practitioners affirm that yellow fever is endemic in Rio de Janeiro, modified by the condition of the atmosphere.

THE INTRODUCTION OF YELLOW FEVER FROM RIO DE JANEIRO IN 1880, BY THE BARK EXCELSIOR.

The circumstances connected with the appearance of yellow fever upon the Swedish Bark Excelsior have been fully recorded in the annual report of the Board of Health for 1880, pp. 34-43.

The circumstances of special interest in connection with the present inquiry are briefly these:

The bark Excelsior sailed from Rio on the tenth of May, 1880, with a cargo of 3600 sacks of coffee, and a crew consisting of three officers and nine seamen. She arrived at the Mississippi Quarantine Station on June 24, having been on the voyage about forty-six days. She was released from quarantine and arrived at New Orleans on the fifth of July. No case of sickness occurred on the voyage or at the Mississippi Quarantine Station. About sixty hours after the vessel reached New Orleans, and after the discharge of her cargo, James Kenney, one of her crew, was attacked with yellow fever and died in the Touro Infirmary, after throwing up black vomit, on the eleventh of July.

The case was not reported to the Board of Health until the tenth of July, when the crew were mustered and ordered to remain on board.

The bark was forcibly returned to the Mississippi Quarantine Station, by order of the Board of Health.

Cases of yellow fever occurred on board the Excelsior on the twelfth, thirteenth and fourteenth of July, and deaths from this disease occurred in the Quarantine Hospital on the seventeenth and eighteenth of July.

The Board of Health retained the Excelsior at Quarantine Station for over one month after the removal of the last case from the vessel on the fourteenth of July.

It is but just to conclude that the prompt action of the Board of Health in sending the Excelsior back to the Mississippi Quarantine preserved the city of New Orleans and the Mississippi Valley from an epidemic of yellow fever in 1880. Nevertheless, it is true that never before in the history of this country were such efforts made to create alarm in the surrounding States.

The vindication of the health and good sanitary condition of New Orleans, and its freedom from yellow fever during 1880, are matters of history, as well as the illegal and unconstitutional usurpation of power by agents of the National Board of Health, prohibiting the shipment of coffee from New Orleans.

In like manner the rigid quarantine maintained by the Board of Health during 1880, 1881, 1882, and 1883 against various ports of the Antilles and along the coast of Mexico, Central and South America, has been fully justified by statistics.

Dr. Mainegra, of New Orleans, who was commissioned by Surgeon-General Hamilton to reside at Vera Cruz during the summer of 1883, upon the recommendation of the President of the Louisiana Board of Health, has furnished the following valuable statistics with reference to the presence and prevalence of yellow fever in Vera Cruz, Mexico, during the past three years:

MORTALITY OF THE CITY OF VERA CRUZ DURING THE YEARS 1881, 1882 AND 1883, FROM THE FOLLOWING FEVERS:

Month.	1881.				1882.				1883.		
	Yellow Fever.	Pernicious Fever.	Remittent Fever.	Gastro Ent. Fever.	Yellow Fever.	Pernicious Fever.	Remittent Fever.	Gastro Ent. Fever.	Yellow Fever.	Remittent Fever	Pernicious Fever.
January	28	4	1	2	1	5	2	1	5	4	2
February	21	6	3	3	1	4	....	2	3	9	....
March	27	3	1	2	2	4	....	5	7	....	1
April	28	8	3	6	1	3	....	2	16	7	1
May	94	11	1	10	5	3	1	3	90	*d*	4
June	234	19	4	3	11	9	1	4	261	/9	6
July	132	16	4	7	7	8	5	3	200	10	4
August	39	12	4	5	14	11	5	5	67	10	4
September	22	9	2	4	8	10	7	....	34	....	....
October	24	14	5	1	5	9	....	1	29	....	....
November	18	15	1	3	5	6	....	7	....	....	....
December	4	6	3	2	12	4	....	3	....	....	....
Totals	671	123	32	48	72	76	21	36	*712	*53	*20

*Incomplete.

The nature of the quarantine labors of the Board of Health of the State of Louisiana, during the years 1880, 1881, 1882 and 1883, have been illustrated by the preceding statistics, and they may be viewed in a more comprehensive manner by the consideration of the following abstract of the quarantine reports:

TABLE GIVING THE NUMBER AND CLASS OF THE VESSELS INSPECTED AT THE MISSISSIPPI QUARANTINE STATION DURING FOUR YEARS, 1880, 1881, 1882 AND 1883.

YEARS.	Steamships.	Sailing Ships.	Barks.	Brigs.	Schooners.	Steam Tugs.	Total.
1880	614	121	356	39	141	.....	1,271
1881	541	92	244	33	132	.....	1,042
1882	615	53	160	28	142	.....	998
1883	687	46	194	34	157	7	1,125
Total	2,457	312	954	134	572	7	4,436

This large fleet, numbering 4436 vessels (more than one-half or 2457 of which were large ocean-going steamships), exceeding 8,000,000 (eight million) tons, were inspected by the officers of the Board of Health at the Mississippi Quarantine Station, together with their passengers, crews and cargoes, during the years 1880, 1881, 1882 and 1883.

During this period not less than 100,000 seamen and passengers passed through this station.

Notwithstanding the prevalence of yellow fever in Vera Cruz, Havana and Rio during this entire period, and notwithstanding the prevalence of yellow fever at Brownsville, Texas, and at Pensacola in 1882, and at the Naval Reservation and at Brewton, Alabama, in 1883, and notwithstanding the presence of yellow fever at the Mississippi Quarantine Station in 1880 and in 1883, New Orleans and the Mississippi Valley have been free from this terrible scourge.

During the same period (1880, 1881, 1882 and 1883) 479 vessels from ports infected with yellow fever, or suspected of being infected, were held in quarantine, disinfected and fumigated.

At the Atchafalaya Station alone 1,064 vessels (about one-half of which were ocean-going steamships), with about 20,000 souls, crew and passengers, were inspected. At the Rigolets Quarantine Station about 4338 vessels, chiefly schooners, with about 24,000 seamen and passengers, were inspected during the years 1880, 1881, 1882 and 1883.

During the period specified, therefore, the Board of Health of the State of Louisiana, through its faithful, experienced and energetic officers, inspected in round numbers about 10,000 vessels, which carried not less than 50,000 seamen and passengers.

The grand conclusions which we reach from these practical operations are:

1. Yellow fever is not indigenous to New Orleans.
2. Yellow fever can be excluded from New Orleans and the Mississippi Valley by a rigid and effective quarantine.
3. Quarantine, to be effective, must embrace not merely inspection and detention, but discharge of infected cargoes thorough ventilation and fumigation.

MAINTENANCE OF THE QUARANTINE LAWS OF THE STATE OF LOUISIANA.

RELATIONS OF NATIONAL AND STATE QUARANTINE—INTERSTATE QUARANTINE—RE-ESTABLISHMENT OF THE MARINE HOSPITAL AT NEW ORLEANS—FLOATING HOSPITAL IN THE MISSISSIPPI RIVER FOR THE ISOLATION AND TREATMENT OF CONTAGIOUS AND INFECTIOUS DISEASES.

HISTORY OF QUARANTINE IN LOUISIANA.

Resistance of the Maritime Associations of New Orleans to the Quarantine Laws of Louisiana—Relations of the Quarantine Established by the State of Louisiana in 1855 *to Public Health and Commerce—Progress of Population and Commerce in Louisiana During the French Domination,* 1683 *to* 1763, *During Which No Quarantine Existed—Progress of Commerce and Population in Louisiana During the Spanish Domination,* 1763 *to* 1802, *During Which Period the Province Was Without Quarantine Restrictions and Laws—Progress of Commerce and Population and Outline of Epidemic Visitations in Louisiana During the American Domination* 1803 *to* 1883, *in Which Quarantine Has Been Established and Maintained at Various Periods—General Conclusions—History of Quarantine* 1853 *to* 1883—*History of the Epidemic of Yellow Fever of* 1878 *in the Mississippi Valley—Resistance of the Quarantine Laws of Louisiana by Morgan's Louisiana and Texas Steamship and Railroad Company.*

DECISION OF THE SUPREME COURT OF LOUISIANA SUSTAINING THE BOARD OF HEALTH AND THE QUARANTINE LAWS AND INSPECTION FEES OF THE STATE OF LOUISIANA.

RELATIONS OF NATIONAL AND STATE QUARANTINE.

The important character of the issues involved in the controversy between the State and National Boards of Health will best be shown by the following extracts from the proceedings of the Board of Health at the regular meeting March 9, 1882.

PROPOSED CONGRESSIONAL ACTION ON THE SUBJECT OF QUARANTINE AND THE NATIONAL BOARD OF HEALTH.

At the regular meeting of the Board of Health, March 9, 1882, the President submitted the following correspondence:

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
STATE HOUSE, New Orleans, February 14, 1882.

Hon. J. Floyd King, House of Representatives, Washington, D. C.:

Dear Sir—I would respectfully request the honorable Representative from Louisiana to favor this board with the complete text of his "bill relating to quarantine, the National Board of Health, and the protection of the United States from yellow fever." I quote from newspaper reports, and therefore may be in error as to the title of the bill of the Honorable Representative.

The members of Congress representing the State of Louisiana will confer a favor and promote the cause of sanitary knowledge by forwarding to the President of the Board of Health all bills discussing and papers relating to domestic and foreign quarantine.

An early reply is respectfully requested.

Your obedient servant,
JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

HOUSE OF REPRESENTATIVES, Washington, February 27, 1882.

Joseph Jones, M D., President Board of Health, State of Louisiana, New Orleans:

Dear Sir—I have mailed you the bills that are before the Committee on Public Health, in accordance with your request. Please notify me if they reach you. I will be glad to get your views on any points in any of them.

Very respectfully yours,

J. FLOYD KING.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
STATE HOUSE, New Orleans, March 4, 1882.

Hon. J. Floyd King, House of Representatives, Washington, D. C.:

Dear Sir—I have the honor to acknowledge the receipt of your favor of the twenty-seventh of February, together with the accompanying bills numbered respectively 3032, 4043 and 4290.

In accordance with your request that I should give my "views on any points in any of them," I beg leave respectfully to submit the following:

1. The bill (Forty-seventh Congress, first session, H. R. 3032) entitled a bill to amend an act entitled "An act to prevent the introduction of contagious or infectious diseases into the United States," introduced by Mr. Van Aernam, January 16, 1882, and the bill 4043, entitled "A bill to prevent the introduction of contagious and infectious diseases into the United States," introduced by Mr. Van Aernam on the sixth of February, 1882, are essentially the same, with the exception that the latter has the following additional clause under section two: "But if it shall appear to the President that such detail cannot be conveniently made, and such decision shall be notified by him to such Board, the latter shall be authorized to appoint such medical officer at its discretion, and if so appointed his salary shall be defrayed from the appropriation under its control" The phraseology of section three is altered, whilst the intent and force remain the same. The two bills of Mr. Van Aernam may be regarded as almost identical.

The bill (Forty-seventh Congress, first session, H. R. 4290) introduced by Mr. King on the thirteenth of February 1882, and entitled a bill to amend an act entitled "An act to prevent the introduction of contagious or infectious diseases into the United States," is essentially the same in language and spirit with the bills of Mr. Van Aernam. We fail to discover any essential difference between the bill of Mr. King, introduced on the thirteenth of February, and the bills previously introduced by Mr. Van Aernam on January 16 and February 6, 1882.

I have been thus explicit in order that the observations on the spirit of one bill will apply to all.

2. The bills of Mr. Van Aernam and of Mr. King have evidently been drawn up in favor of the National Board of Health for the enlargement of its powers, and for the subjection of the entire quarantine system of the United States and the subordination of all State Boards of Health and all State quarantine establishments to the control of the said National Board of Health.

The bills of Mr. Van Aernam and Mr. King place the President of the United States under the control of the National Board of Health in certain sanitary matters, and erect the said board into an arbitrary and despotic tribunal, clothed with plenary powers to pass its opinions upon the quarantine regulations of any State, port or municipality; and induce the President of the United States to order the legally constituted authorities appointed and elected, and commissioned by the people of the individual State to make, adopt, and enforce such rules and regulations as the National Board of Health may present. If the sanitary authorities of the States and municipalities should exercise the rights of freemen, as conferred upon them by the constitution of the United States or by the will of the people, and fail or refuse to enforce the rules and regulations promulgated for their instruction and guidance by the National Board of Health, then the President shall detail an officer or appoint a proper person for that purpose.

3. The bills of Messrs Van Aernam and King prescribe rules and regulations for foreign shipping in foreign ports, and subject all vessels to a fine, not to exceed $1000, (one thousand dollars), which do not conform with the provisions of these bills at the *ports of departure*. Whether the jurisdiction of the United States extends in sanitary matters to all ports, of all the world, is a question of maritime law. Whether the United States will be rich enough to supply the vast sums required to maintain sanitary inspectors, conduct fumigations and enforce sanitary rules in all the chief ports of the world, must be ultimately determined, by the people who bear the burdens of taxation.

1. Section five of the bills of Messrs. Van Aernam and King places the regulation of quarantine in the hands of the National Board of Health and effectually abolishes State quarantines. The effort is thus made to have Congress pass a law delegating certain powers to the President of the United States and to the National Board of Health, which have not been embodied in the constitution of the United States.

As is well known to the learned and able representative of Louisiana, that the powers of the President of the United States are specially laid down in article two of the constitution, and it is evident that no power whatever is conferred upon him to control or intermeddle with the quarantine and sanitary affairs of the individual States. The National Board of Health as now constituted, was the creation of President Hayes, and derives its existence from a special act of Congress, and not from the votes of the people; the creature, therefore, cannot be greater than the creator, and the assumption by Congress of powers not conferred by the constitution of the United States is subversive of the inalienable rights and liberties of the people. The idea that such measures should be sustained because they are dictated for the preservation of the public health will not bear examination for if the States are deprived of their rights of local government and self-protection in sanitary and quarantine matters, they may in like manner be deprived of all civil rights.

In section four of the constitution of the United States, a republican form of government is guaranteed to every State comprising the Union. If the organic acts of individual States relating to sanitation and quarantine are to be set aside according to the opinions of the creatures of Congress or of the President, the Republic has been transformed into a centralized despotism.

5. The spirit, as well as the letter of the bills of Messrs Van Aernam and King dispose summarily of the question as to the absolute power of Congress to deal with quarantine in all its bearings as between foreign nations and domestic ports and individual States. Has Congress the power to pass sanitary and quarantine laws intended to act with equal and uniform power in every State and city in the Union, and controlling the foreign and domestic commerce of every port?

It does not appear that Congress has the power to pass such laws.

We find in Brightly's Digest, p. 810, under the head of Quarantine and Health Laws, an act of Congress passed February 25, 1779. By the third section of this act it is provided that "there shall be purchased or erected, under the orders of the President of the United States, suitable warehouses, with wharves and inclosures, where goods and merchandise may be unladen and deposited from any vessel that may be subject to a quarential or other restraint, pursuant to the health laws of any State as aforesaid, at such convenient place or places therein as the safety of the public revenue and the observances of such health laws may require."

It is evident that this provision has reference to the safety of the revenue and not to the enforcement of quarantine law. That the subject of quarantine is held to be a State and not a United States matter

will appear evident from the whole tenor of this law. Thus the first section provides that the quarantine laws of the States shall be observed by the Federal officers; and that the Secretary of the Treasury is authorized to extend the time for making entries, etc., when a conformity to such health laws shall require it. Section two provides that vessels prohibited by the health laws of any State from coming to at ports of delivery, may unload elsewhere; the cargo to be warehoused, and special permits granted, etc. Sections four, five, six and seven, provide for the removal of Custom-house officers, prisoners, public officers, and the Supreme Court from unhealthy to healthy places, and section eight provides that the costs of such removal shall be reported to Congress.

Throughout the whole of this law it is evident that the authority of the States to enact quarantine laws is fully recognized. The injunction it contains upon Federal officers to aid in the execution of such laws confirms and strengthens this view.

In the case of Gibbons vs. Ogden (Wheaton's Reports, vol. 9) Mr. Webster, in his opening argument, says: "When, until now, have they (the States) interfered with the navigation of the country? The pilot laws, the health laws, or quarantine laws, and various regulations of that class which have been recognized by Congress, are no arguments to prove, even if they are to be called commercial regulations (which they are not) that other regulations, more directly and strictly commercial, are not within the power of Congress." "The truth was," he thought, "that all these things were, in their general character, rather regulations of police than of commerce, in the constitutional understanding of that term. Quarantine laws, for example, may be considered as affecting commerce, yet they are in their nature health laws. In England we speak of the power of regulating commerce as in Parliament, or the King as arbiter of commerce, yet the city of London enacts health laws. Would any one infer from that circumstance that the city of London had concurrent power with Parliament or the Crown to regulate commerce? Or that it might grant a monopoly to navigate the Thames? While a health law is reasonable it is a health law, but if, under color of it, enactments should be made for other purposes, such enactments might be void."

Mr. Emmett agreed with Mr. Webster that quarantine laws are not within the competency of Congress. The Attorney General, Mr. Wirt, viewed quarantine laws as police and not commercial regulations.

Chief Justice Marshall delivered the opinion of the court, and referring to the arguments of counsel drawn from the nature of the inspection laws, quarantine laws, etc., he says (idem, p 203): "They form part of that immense mass of legislation which embraces everything within the territory of a State not surrendered to the general government; all which can be most advantageously exercised by the States themselves. Inspection laws, quarantine laws, health laws of every description, as well as laws for regulating the internal commerce of a State, and those which respect turnpike roads, ferries, etc., are component parts of the same."

"No such general power over these subjects is granted to Congress, and consequently they remain subject to State legislation."

These opinions of the most eminent legal minds of the United States seem fully to settle the question as to the source from whence quarantine laws must emanate.

6. The letter and the spirit of the bills of Messrs. Van Aernam and King are in direct opposition to article four, section one, of the Constitution of the United States, which ordains that "Full faith and credit shall be given in each State to the public acts, records and judicial proceedings of every other State. And the Congress may, by general laws, prescribe the manner in which such acts, records and proceedings shall be proved and the effect thereof." Constitution of the United States of America, article four, section one.

The Legislature of Louisiana, as the representntive of the people of this State, has passed organic acts establishing a Board of Health, clothed with certain powers, for the regulation of quarantine and the protection of the State against the introduction of foreign pestilence.

The President and Congress of the United States are bound by the constitution to give full credit and support to the acts of the Legislature of Louisiana, which in no manner violate the constitution of the United States.

I hope that the honorable Representative from Louisiana will pardon the frank and earnest manner in which I have met his request to express my views with reference to the bills relating to quarantine and the National Board of Health now before Congress.

I hold it to be the duty of the Representatives in Congress to sustain the will of the people of Louisiana as expressed in the organic acts of her General Assembly. The Board of Health should be the first to acknowledge any just or good work or measure for the perfection of the sanitary and quarantine affairs of Louisiana by her Representatives in Congress.

It is well known that previous to the recent civil war the learned and patriotic Representatives in the national halls accomplished much good for the State of Louisiana and for the entire Mississippi Valley by securing from Congress a liberal appropriation for the erection of a commodious fireproof warehouse at the Mississippi Quarantine Station; but subsequently to this great calamity the labors of the honorable Representatives of this province have as yet yielded no result that has tended to strengthen the hands of those charged by the laws of the State with the conduct of her sanitary and quarantine affairs.

It is but too true that since the civil war the legislation and decisions of the United States Courts have tended to weaken and derange the quarantine system of Louisiana, and to strengthen the hands of those who, for mercenary reasons, oppose the legislative enactments for the exclusion of foreign pestilence.

With great respect I have the honor to remain your obedient servant,

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

A true copy from the minutes of the meeting of the Board of Health, State of Louisiana, held March 1882.

S. S. HERRICK, M. D., Secretary.

INTER-STATE QUARANTINE.

The President of the Board of Health has, at various times during the existence of the present Board of Health strenuously advocated:

The passage of a joint ordinance by the Board of Health and City Council, imposing severe fines upon any railroad corporation or official, and upon any captain or officer of a steamboat, who shall bring within the limits of New Orleans any case of small-pox or other contagious disease. The process should be so simple and withal so summary, that parties bringing small-pox or any other contagious disease within the limits of New Orleans, should be immediately arrested and punished. Similar laws should be enacted by

the Legislature for the entire State, thus protecting Louisiana from the contagious diseases of surrounding States. No State in this Union has been more exposed to the pestilences of surrounding States, cities and countries than Louisiana, and no State has been more generous or noble in her ministrations to the sick.

The vast burden which has been imposed upon the State of Louisiana, and more especially upon the medical profession of New Orleans, in virtue of the position of this State at the mouth of the Mississippi River, and in virtue of the vast number of strangers, merchants and emigrants, passing this gate-way of the Mississippi Valley is shown by the following facts:

During the past forty-five years Louisiana has cared for and treated in the Charity Hospital a grand total of 340,411 sick; of this vast number, foreign countries furnished 290,128, and the various States of the Union, 80,289; England contributed 15,907, France 19,788, Germany 43,435, Prussia 6,880, Scotland 5,432, Spain 3777, Sweden 2,350, Switzerland 4,649, Canada 2,693, Ireland 137,099 patients to the Charity Hospital. Total from these countries, 252,945.

During this period Louisiana furnished only 17,013 patients to the Charity Hospital. Louisiana, in addition to the 260,128 foreigners (during the period specified, 1830-1880), has cared for 53,570 sick and destitute poor within the walls of Charity Hospital, the vast proportion of which came from such States as Alabama, Ohio, Kentucky, Iowa, Pennsylvania, New York, North Carolina, Mississippi, Tennessee and Missouri; 11,611 natives of New York and 7,462 natives of Pennsylvania have been treated within the Charity Hospital.

Ireland alone has furnished eight times more patients to the Charity Hospital than Louisiana.

If the annual cost of maintaining the Charity Hospital is placed at $100,000, then the total amount expended by the State of Louisiana in caring for and treating the sick and burying the dead of this grand total of 340,411 human beings, from all countries and from all States, was $4,500,000. Of this amount the natives of Louisiana received about one-twentieth, or about $225,000, while the natives of foreign countries and of the surrounding States composing the American Union received $3,225,000.

In view of the preceding facts illustrating at once the vast mass of human sickness and suffering which has been relieved by the State of Louisiana, so ably represented by her self-sacrificing and learned physicians, it is surely remarkable that the surrounding States should strive incessantly to injure the fair name of Louisiana, and more especially of the members of the medical profession, by reiterating the slanders that the existence of pestilence in New Orleans has been repeatedly ignored for the purpose of promoting the needs of commerce; and it is still more astounding that men claiming to represent Louisiana in sanitary and quarantine affairs, should be active agents in the promulgation of the slander.

RE-ESTABLISHMENT OF THE MARINE HOSPITAL OF NEW ORLEANS.

The greatest danger to New Orleans from small-pox has been the absence of a marine hospital for the cure of infectious and contagious diseases among that class for whose care and treatment the United States government is alone responsible. It is a remarkable fact that, with all the perpetual agitations, with reference to the public health, by the National Board of Health during the past three years, the United States government should be without any hospital for the treatment of seamen suffering with contagious and infectious diseases at the great port of New Orleans.

In the year 1798 a law was enacted by Congress imposing a tax of 20 cents per month on seamen employed on American vessels engaged in the foreign and coasting trades, to be collected by the several collectors of customs; and out of the funds thus created the President of the United States was authorized to provide for the temporary relief and maintenance of sick and disabled seamen in hospitals, or in such other manner as he should direct; provided, however, that the moneys collected in each district should be expended therein.

The same act provides that when there should be a sufficient surplus, after defraying the expenses of temporary relief to seamen, it should be used in erecting marine hospitals.

For nearly forty years after the establishment of marine hospitals the expense attending the maintenance of sick and disabled seamen had to be met out of the funds created by the tax on seamen. The demand for relief far exceeded the resources at command.

Those who engaged in the commerce of the Western rivers were subjected to climatic changes that were very pernicious. The numbers who perished in the long-descending voyages of the flat-bottomed boats, which left the upper waters of the Mississippi and its tributaries in summer and early autumn, to find a market for the fruits of their toil at New Orleans, were very great. Nothing was more common than for two out of the five hands who generally managed these boats to die, and it sometimes happened that the whole crew perished from disease, and that the boat with its cargo was left deserted.

The steamboats ascending the Mississippi and its tributaries brought up every year a great number of deck passengers, chiefly the sons of farmers, returning from that flat-boat voyage, many of whom died on board, while others were left on shore at the river towns, helpless among strangers. The cholera epidemic of 1832 and 1834 added greatly to the catalogue of ills. Moved by a feeling of common humanity for the large class of young men who have surrendered the comforts of home and embarked in the daring, precarious and toilsome interest of commerce, and sensible also of the suffering attendant upon such an improvident life, whole communities, both on the seaboard and in the interior districts, petitioned Congress for additional appropriations and the enactment of laws providing increased facilities for the relief of this unfortunate class Their appeals were heeded by the representatives of the people, and Congress passed an act, which was approved March 3, 1837, authorizing the Secretary of War to appoint a Board of Medical Officers of the Army to select and purchase sites for marine hospitals on the Mississippi and Ohio rivers and Lake Erie.

HOSPITAL AT MacDONOUGH'S, OPPOSITE NEW ORLEANS, (SOLD).

In the year 1837 a site upon which to erect a Marine Hospital for the port or New Orleans was purchased at MacDonough's, on the right bank of the Mississippi River, and opposite New Orleans. The hospital was commenced in 1838 and completed in 1849 at a total expenditure of $122,772 70.

The hospital was first opened for the reception of patients in 1842, and was continued in use until early in June, 1858, when it was abandoned, and the patients were removed to the United States Barracks, below the city of New Orleans, in consequence of an inundation of the Marine Hospital grounds by the overflow of the Mississippi River. Such remnants of the building as remained after the close of the war were sold in 1866 for the sum of $300, but the amount does not appear to have been paid into the treasury.

SECOND HOSPITAL AT NEW ORLEANS, UNFINISHED AND OCCUPIED BY CITY AS AN INSANE ASYLUM.

Five years after the hospital of MacDonough, which had required about twelve years to complete, was first occupied, and while it was in successful operation, a site for a second Marine Hospital for New Orleans was selected in a swamp back of the city, and the erection thereon of an immense cast-iron building was commenced in 1856. Notwithstanding the preparation for a foundation for the building by the driving of piles, the walls for a portion of the structure sank about two feet before completion and had to be reconstructed.

The work on the hospital building was suspended in July, 1860, after more than half a million of dollars had been expended, During the war a large amount of work was done on the building by the Quartermaster Department of the army to fit it for a military hospital, including the erection of a kitchen and the flooring of the entire building. Notwithstanding the inauguration of a system of drainage and the improvement of the grounds resulting from the filling up with decaying vegetation, during these seventeen years which had elapsed since the military command of Gen. Butler, the site still remains unhealthy. To complete the building it is estimated that it would require an additional expenditure of $200,000. The building has never been occupied as a Marine Hospital and is at present used by this city as an Insane Asylum.

This building after extensive advertisement by the United States authorities, was offered for sale at public auction. There was but one bid for the property, and that so far below its real value that the Secretary rejected the bid.

New Orleans, therefore, was during 1880, 1881, 1882 and 1883, without any Marine Hospital, the patients being treated in wards of the Hotel Dieu and Touro Infirmary from which all such infectious and contagious diseases as small-pox are excluded.

From the annual report of the supervising surgeon-general of the Marine Hospital Service of the United States, for the fiscal year 1881, we gather that the receipts from all sources were $386,059 81, and the net expenditures $400,404 46; and during the year 32,613 patients received relief from the service.

Notwithstanding the expenditure of this large sum, the United States has been without any proper hospital for the treatment of small-pox in New Orleans. The seamen afflicted with this horrible disease are allowed to depend upon the provisions of the city of New Orleans and the Board of Health for their isolation.

It was urged that the Representatives of Louisiana in Congress should be instructed by the Governor and General Assembly to endeavor to cause the passage by Congress of the necessary bills and appropriations for the erection of a suitable Marine Hospital at New Orleans, in order that their constituents in Louisiana might be protected from the contagious and infectious diseases, as small-pox and yellow fever which are disseminated to a great extent by the seamen of the United States.

This subject was urged by the President of the Board of Health, upon the representatives of Louisiana in the United States Senate and House of Representatives; and it

held, that the agitation of this subject, resulted in the passage by Congress of the act approved August 7, 1882, appropriating for the purchase of a site and the erection of a marine hospital at New Orleans, of $100,000.

A site has been selected at New Orleans by Supervising Surgeon General John B. Hamilton, consisting of twenty-two acres of ground and the batture. Plans for the building have been prepared under the direction of Col. John W. Glenn, Supervising Architect, and approved by Supervising Surgeon General Hamilton, of the United States Marine Hospital Service.

We have been informed that the hospital will be completed in 1884.

EFFORTS OF THE LOUISIANA BOARD OF HEALTH TO SECURE THE PASSAGE OF AN ACT OF CONGRESS FOR THE ESTABLISHMENT OF A FLOATING WARD OR HOSPITAL IN THE HARBOR OF NEW ORLEANS.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, October 12, 1882.

To the Representatives of Louisiana in the United States Senate and House of Representatives:

Gentlemen—I have the honor to place in your hands the enclosed:

1. "An act to authorize the Board of Health of the State of Louisiana to establish quarantine stations at the various approaches to the city of New Orleans," etc

2 "An act to organize, support and maintain a floating ward or hospital in connection with the United States Marine Hospital at this port."

You are earnestly requested by the Board of Health of the State of Louisiana to urge the passage of these acts upon the Congress of the United States at the next session, commencing December 3, 1882.

You are also most respectfully and cordially invited to appoint such time and place in the city of New Orleans as may suit your convenience and pleasure to meet the Board of Health in conference concerning the important measures embraced in the proposed acts.

I have also taken the liberty to enclose a copy of my letter to Hon. R. N. Ogden, Speaker of the House of Representatives, dated May 30, 1882, relative to the subject of quarantine in Louisiana for the exclusion of foreign pestilence from the State and Valley.

With great respect and high esteem I have the honor to remain your obedient servant,

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, November 23, 1882.

Hon. E John Ellis, New Orleans, La.:

Dear Sir—In accordance with your request I have the honor to enclose the following:

(a). An act to construct, maintain and support a floating ward or hospital connected with the United States Marine Hospital at New Orleans.

(b). Copy of letter of Surgeon General Hamilton, of the United States Marine Hospital Service, relative to said act, marked (a).

(c). An Act to authorize the State of Louisiana to establish quarantine stations, to inspect and disinfect vessels, and to collect an inspection fee.

(d). Opinion of Col. F. C. Zacharie, relative to the quarantine laws of Louisiana.

In presenting the preceding (enclosed) acts, for the action of Congress, the Board of Health of the State of Louisiana desires that you should exercise your discretion as the honorable representative of this State.

With great respect and high esteem, your obedient servant,

[Signed] JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

TREASURY DEPARTMENT,
OFFICE SUPERVISING SURGEON-GENERAL, U. S. MARINE HOSPITAL SERVICE,
Washington, November 6, 1882.

Joseph Jones, M. D., President Board of Health, State of Louisiana, corner of Royal and St. Louis streets, New Orleans, La.:

Sir—I have the honor to acknowledge receipt of your letter of the third instant, inclosing for suggestion a draft of a bill to construct and maintain a floating ward or hospital in connection with the Marine Hospital at the port of New Orleans, and return the draft herewith, with certain verbal alterations, some of which, perhaps, are not important, but seem necessary. It seems to me that section two might be shortened without detracting from its stringency, inasmuch as the statutes cover the manner in which public works shall be advertised for, etc. I have therefore stricken out in pencil such sentences as I think could be dispensed with, and made an amendment to section two. In section three I have added "Revenue Marine, and of the Marine Hospital Service," instead of the Marine Hospital Service alone. The other alterations are merely verbal, in the interest of brevity, except section four, which I think should provide for the care of foreign sailors, who are, under the Revised Statutes, admitted to marine hospitals on the application of consuls of the nations to which they respectively belong. Also, the words "Secretary of the Navy," wherever they occur, have been changed to read "Secretary of the Treasury," as this bureau is one of the so-called "independent" bureaus under the direction of the Secretary of the Treasury, which, until the formation of the National Board of Health, was intrusted with the execution of all laws affecting commerce and requiring action by the Federal authorities.

I refrain from making any indorsement of the proposed act, at this time, as it will doubtless, in the course of business, be referred to the Secretary of the Treasury by the committee of the House of Representatives having the matter in charge, and such report as I may have to make upon it will be made at that time. It is proper to say, however, that I have embodied your suggestions as to the construction of a floating ward in the annual report of this service, which will be issued in a few weeks, and will report the same favorably when it is referred as above stated. Very respectfully,

JOHN B. MAMILTON,
Supervising Surgeon General.

AN ACT.

To construct, support and maintain a floating ward or hospital, in connection with the United States Marine Hospital, at the port of New Orleans, in the State of Louisiana, for the purpose of isolating and maintaining sailors, mariners and United States Marine Hospital patients afflicted with contagious or infectious diseases; to provide a steam launch therefore, and to appropriate the sum of thirty thousand dollars for the construction, organization and maintenance of the same, under the direction and control of the United States Marine Hospital Service.

SECTION 1. *Be it enacted by the House of Representatives and the Senate of the United States, in Congress Assembled*, That the sum of thirty thousand dollars be and is hereby appropriated from moneys not otherwise appropriated from the Treasury of the United States for the purpose of constructing and maintaining a floating ward or hospital at the port of New Orleans, Louisiana, in connection with the United States Marine Hospital at that port.

SEC. 2. *Be it enacted, etc.*, That immediately after the passage of this act the Surgeon General of the United States Marine Hospital Service shall cause to be prepared plans, designs and specifications for the building of said floating ward, which shall be submitted to the Secretary of the Treasury for his approval and adoption, and that on the approval and adoption by the Secretary of the Treasury of said plans, designs and specifications, the building shall be constructed under the direction of the Supervising Architect, in accordance with existing law.

SEC. *Be it enacted, etc.*, That on the completion of the same the Secretary of the Treasury shall cause the same to be inspected by an officer of the Revenue Marine and of the United States Marine Hospital Services, who shall report in writing the condition thereof and whether the terms and specifications of the contract have been faithfully complied with, and the Secretary of the Treasury, on a favorable report being made, shall receive the same and turn it over to the United States Marine Hospital Service.

SEC. 4. *Be it enacted, etc.*, That the Surgeon General of the United States Marine Hospital Service shall assume control thereof, and see that the same is properly provided for the reception, treatment and maintenance of all United States Marine Hospital patients and of foreign sailors admitted thereto, suffering from contagious or infectious diseases, and shall cause said patients to be thereto removed, from time to time, and isolated and maintained separate and apart from the other United States Marine Hospital patients and from communication with persons from the shore, save those necessary to the conduct of said floating ward and hospital, and then under such rules and regulations of the United States Marine Hospital Service, or such as may be established by the Surgeon or Surgeons, Physicians or Physician in charge, under the direction of the United States Marine Hospital Service.

SEC. 5. *Be it enacted, etc.*, That the said floating hospital or ward shall be moored in the stream of the Mississippi River, at such point or points as the Board of Health of the State of Louisiana may direct, so as to best avoid the danger of infection or contagion to the shores thereof, and best subserve the proper conduct and administration of said ward.

SEC. 6. *Be it enacted, etc.*, That so much of the balance of the appropriation herein made as may not be used in the building, constructing, furnishing and finishing of the said floating ward shall be devoted to the purchase of a suitable steam launch of such build and design as shall be approved by the United States Marine Hospital Service, to be used in conveying patients and supplies to said floating ward, and in the necessary business thereof, and the remainder of said appropriation, if any there be, shall be applied to the maintenance of said floating ward; and the funds appropriated shall be drawn and expended in the manner now provided by the laws and rules of the United States Marine Hospital Service, and the laws and rules and regulations of the Department of the Treasury of the United States.

HISTORY OF QUARANTINE IN LOUISIANA.

The first great practical and permanent advance in sanitary science by the Representatives of the people of Louisiana in General Assembly convened, was made in March, 1855, when an act was passed "To establish quarantine for the protection of the State."

This valuable act, in its twenty-ninth section, provided not merely for the maintenance of an effective and enlightened system of quarantine, but also established and clothed with ample powers a Board of Health, composed of nine enlightened citizens of the State.

The Legislature of 1877, which superseded the Radical rule, passed four acts of importance, which reorganized and rendered more efficient the Board of Health, provided for the disposition of offal, garbage and night soil and dead animals in the parishes of Jefferson, Orleans and St. Bernard, regulated the cleaning of vaults and privies, and provided for the gauging and inspecting of coal oils and illuminating oils, or fluids derived wholly or in part from coal or petroleum.

By act No. 80, approved April 20, 1877, the registration of births, deaths and marriages in the parish of Orleans was confided to the Board of Health; by act 14, approved March 23, 1877, the present system for the disposal of offal, garbage, night soil and dead animals, at certain designated nuisance wharves or landings, and by suitably constituted boats was inaugurated. The former act increased the revenues of this Board and tended to render more accurate the record of the vital statistics of New Orleans, whilst to the latter must be attributed results of the greatest

importance to the sanitary improvement of the city in daily removing and effectually disposing of the refuse and excreta of 230,000 inhabitants by consigning them to the bosom of the great Mississippi.

Without doubt no measure of greater moment to the State of Louisiana and to the Mississippi Valley was discussed and acted on by the General Assembly of 1882 than that which related to the regulation of quarantine charges at the mouth of the Mississippi River.

Great legal difficulties were involved in the question of quarantine charges, and without a fixed and definite revenue the maintenance of an efficient quarantine on this great river for the protection of the State and valley was impossible.

It is, therefore, of importance that a clear statement should be made, for the guidance of future legislatures and boards of health, of the questions involved and the arguments advanced during the discussion of questions relating to the maintenance of quarantine by the State of Louisiana.

THE MAINTENANCE OF QUARANTINE ON THE MISSISSIPPI RIVER AND AT OTHER POINTS ON THE MAIN CHANNELS OF COMMERCE BY THE STATE OF LOUISIANI.

The quarantine act of 1855 appears to have been in operation, without "legal" opposition, until 1874, when Charles Morgan, John H. Clark, C. H. Mallory et als., and Fred. Baker, commenced legal proceedings, to enjoin the Board of Health from collecting the quarantine fees, in accordance with the organic acts of the Legislature of Louisiana, approved March 15, 1855, and March 18, 1858.

The action of the Board of Health, with reference to this matter, is of importance; as to its indecision and failure to uphold the laws of Louisiana, regulating quarantine, unnecessary burdens were imposed upon the tax-payers, and great damage wrought of to the quarantine system instituted by the Legislature of 1855 for the protection of the valley from the importation of foreign pestilence.

At a meeting of the Board of Health, on the twentieth of May, 1874, upon motion of Mr. Burwell, seconded by Mr. Heath, it was "resolved that, with reference to the injunction brought against the board by Charles Morgan, restraining the board from exercising the provisions of the act of quarantine, approved March 15, 1855, and the amendment thereto, *be referred to the President, C. B. White, to take such action, after consultation with the attorney of the board, C. S. Rice, Esq., as he might deem necessary in the premises.*"

It appears that *this injunction was not resisted by the Board of Health, and that*, instead of pressing this important question to a final decision, the Legislature was petitioned for funds to conduct the Mississippi quarantine, and that an appropriation was made in warrants, which yielded in cash $18,000. This same Board of Health had, in 1869, obtained from the Legislature $19,258 85 in cash. How large a sum in warrants, and how many thousands of dollars were saddled upon the taxpayers of Louisiana by these transactions is unknown, in the absence of the books of the Auditor and Treasurer.

The President of the Board of Health, Dr. C. B. White, in the report for the year 1873, states that "the appropriation (by the Legislature) last year was but seven thousand dollars, instead of twelve thousand, as considered necessary by the board, and owing to the pressure of creditors, the warrants were immediately sold, and resulted in an addition to the funds of the board of but thirty-one hundred dollars and eighty-six cents, whilst its indebtedness was over five thousand dollars, thus leaving about two thousand five hundred dollars to be paid out of quarantine receipts of 1873."

"In estimating the revenues of the board, and as partly explanatory of its yearly expenses over receipts, it is to be considered that the receipts at the Mississippi Quarantine Station have decreased from twenty-five thousand in 1869, to eighteen thousand in 1873, although the receipts from the Atchafalaya Station have increased about one thousand dollars per annum, the actual decrease of receipts is about six thousand per annum, as compared with 1866."

It is evident, from the preceding statement, that the warrants issued to the Board of Health by the Legislature were worth less than half their face value.

Dr. C. B. White, in his report of 1874* to Gov. William Pitt Kellogg, thus states the

*The Board of Health, in 1774, was thus constituted: Members—G. W. R. Bayley, Esq., C. E.; Edward Heath, Esq; Thomas J. Woodward, Esq.; William M. Burwell, Esq.; A. W. Smythe, M. D.; S. M. Bemiss, M. D.; F. B. Gaudet, M. D.; James F. Finney, M. D.; C. B. White, M. D., President. Secretary and Treasurer, S. C. Russell, M. D.; Attorney, Charles S. Rice, Esq.; Chemist, S. S. Herrick, M. D.; Clerk, Isaac Statham; Sanitary Inspector, First District, S. S. Herrick, M. D.; Second District, James F. Newman, M. D.; Third District, Gustavus Devron, M. D.; Fourth District, Joseph Holt, M. D.; Fifth District, Charles H. Young, M. D.; Sixth District, George Kellogg, M. D.; Seventh District, George K. Pratt, M. D.

financial condition of the Board of Health and the effects of the injunction obtained by Morgan and others, restraining the collection of quarantine fees at the Mississippi Quarantine Station.

"The neglect of the General Assembly, at its session of 1874, to provide by appropriation for the usua annual deficiency in the revenues of the board, and the additional pecuniary embarrassment caused by the action of certain ship-owners in enjoining the Board from collecting quarantine dues, threatened the whole quarantine system of the State with immediate dissolution. To bring this important matter promptly and clearly before the only authority competent to remedy this unfortunate and dangerous condition of affairs, a special report was submitted to the Legislature immediately upon its assemblage. Being of permanent interest, it is made a part of the annual report, and now follows:

"The Board of Health respectfully submits a special report.

"This report exhibits the receipts and expenditures of the Board of Health during the year 1874, its liabilities at the present date, the considerable decrease during the present year of the revenue which supports the quarantine system and the Board of Health, and the probable total annihilation of that revenue in the near future." * * *

This report shows that during the year 1874 the total cash received from vessels, via the Mississippi Station, was $19,237 60; and the entire revenue from all quarantine stations, including the sum just mentioned, was $20,438 72.

The account shows that this entire sum was expended, and that the liabilities of the Board of Health of the State of Louisiana, on the twenty-first day of December, 1874, amounted to $10,826 36.

Dr. C. B. White thus enumerates the causes of the large indebtedness of the Board, as shown by the statement of the Secretary:

"The deficient appropriation by the General Assembly at its session of 1873, which left debts of the Board unliquidated amounting to $2500.

"2. The Legislature of the session of 1874 made no appropriation whatever for the relief of the Board, which consequently began the year with the burden of seven thousand dollars of debts.

"3. The receipts of the Mississippi quarantine Station have decreased from twenty-five thousand dollars in 1860 to nineteen thousand dollars in 1874.

"4. The cost of carrying on the operations of the Board is somewhat enhanced by the increased price of supplies in general, while quarantine dues, not being, as formerly, paid in gold or its equivalent, their purchasing power is, to a corresponding extent, diminished.

"5. While the revenues of the Board have thus seriously decreased, its expenses, even with constant efforts at economy, have decidedly increased.

"The General Assembly is respectfully reminded that, previous to the act of March 11, 1870, increasing the powers of the Board, and consequently its duties, this body was in effect merely a Quarantine Board, and its duties and powers as a Board of Health practically nothing.

"Previous to that date there were no meteorological or other observations made, no extended or systematic or continuous recording of the facts of epidemics and epidemic diseases, no laboratory work or expenses, no vaccine furnished to physicians of the city and State, no purchases of scientific instruments or use made of them, no house-to-house inspection with its attendant expenses. Whatever reports were made to the Legislature consisted of a few pages containing some valuable facts, but no way comparable with the accurate, extended and complete reports which are now annually presented, and whose value is distinctly recognized by all experts in sanitary matters throughout the United States.

"As has been stated, the Board of Health began its fiscal year with a debt of seven thousand dollars. To increase its financial difficulties, Charles Morgan and other steamship proprietors procured, in the United States Court, an injunction forbidding the Board to collect quarantine dues from vessels belonging to the before-mentioned persons. The diminution of the revenues of the Board from this cause, during the year just closed, amounts to the sum of twenty-six hundred dollars.

"In April, upon the recommendation of this Board, Dr. Alfred W. Perry was appointed quarantine physician at the Mississippi Station. * *

Dr. Perry made a contract with the Board to accept salary at the rate of thirty-five hundred dollars per annum, instead of five thousand dollars, and to furnish an assistant at five hundred dollars per annum, instead of two thousand, as salaries are allowed by law. In addition to these reductions, he brought down the pay-roll of the station, by the discharge of employes, not required by the necessities of the station, and by reducing its supplies used, so that the expenses of the Mississippi Station were reduced from about twelve hundred to seven hundred and thirty dollars per month; and at the date of his arrival had laid before the Board a proposition, whilst increasing the salary of the assistant physician, to bring the total expenses of the station to six hundred and ninety dollars per month, being at the rate of, say, eight thousand five hundred dollars per annum, instead of fourteen thousand six hundred dollars, as under his predecessor.

"Much to the regret of the Board of Health, on the fourteenth of October, Dr. Perry was superseded by Dr. Howe, who held the position about five weeks, during which period all attempts at economy were abandoned, and the expenses brought up to the former rate of about fifteen thousand dollars per annum.

"At the request of the Board of Health, made in consequence of this official extravagance, and also because of disobedience to positive instructions of the Board, directing disinfection of vessels from infected ports, Dr. Howe, on November twentieth, was superseded by Dr. Julius Clark. By Dr. Clark the plans of the Board for the economical management of the Mississippi Quarantine Station are cordially and completely carried out, the rate of expenditure at the present time being somewhat less than under the administration of Dr. Perry.

"It is evident therefore that the receipts of the Board have therefore been so managed that, had the action of the courts not deprived it of a portion of its usual revenue, they would have very nearly provided for its expenses. The indebtedness of the Board, December 31, 1873, seven thousand dollars, and its loss of revenue by injunctions, two thousand six hundred dollars, approximate closely to the ten thousand dollars indebtedness of the Board, December 31, 1874. This debit will require an appropriation by the General Assembly equivalent to ten thousand dollars in cash.

"As was suggested in the opening sentence of the report, it is almost certain that all revenues of the Board of Health will be taken away very early in the year. If the maintenance of quarantine and the continued existence of the Board of Health be esteemed desirable by the Legislature, action to that end is necessary. The amount of appropriation necessary for the support of quarantine and the Board of Health during 1875 is twenty-six thousand dollars. The small amount of three hundred dollars for nails and paints is necessary to prevent the rapid and serious deterioration of the quarantine buildings. The work and repairs could be done by the employes of the Station."—*Annual Report of the Board of Health, to the General Assembly of Louisiana, 1874, Session at New Orleans; printed at the Republican office, 95 Camp street, pp. 9-17.*

It will be observed from the foregoing statement of Dr. C. B White, President of the Board of Health, that a complete and unconditional surrender of the questions at issue which related to the maintenance of the quarantine system of Louisiana by the organic acts of the Legislatures of 1855 and 1858 was made by the Board of Health.

The President held that it was "*almost certain that all revenues of the Board will be taken away very early in the year ;*" therefore, instead of defending the quarantine laws and exhausting all legal measures to settle this important question, the injunction against the Board of Health was allowed to remain in the lower court, in which it originated, and the responsibility of maintaining the Board of Health and quarantine was referred to legislative action, and ten thousand dollars solicited to pay the indebtedness of the Board, and twenty-six thousand dollars asked for the support of quarantine and the Board of Health during 1875.

This appeal was not without its effect, and Dr. C. B. White, in his annual report for 1875, informs "His Excellency, William P. Kellogg, Governor of the State of Louisiana," that the appropriation made by the General Assembly, session of 1875, for the maintenance of health and quarantine, together with the receipts from the Mississippi Quarantine Station, have greatly relieved the financial embarrassment of the Board of Health, and but for circumstances beyond its control the relief would have been complete, and the Board at the close of the year been entirely out of debt."

From the report of the Treasurer, S. C. Russell, M. D., we gather that the Legislature appropriated $24,000 to the Board of Health, as per act No. 17, of 1875. Eighteen thousand dollars of this appropriation, together with $13,735 50 were received from fees on vessels at the Mississippi Quarantine Station during the year 1875. The total receipts of the year 1875 were $33,180 02; this entire amount was expended, and still the liabilities of the Board, on the thirty-first of December, 1875, were $4530 50.*

Dr. Felix B. Gaudet was elected President of the Board of Health in 1876, and no report was issued for this year.

After the overthrow of the Packard government, the reorganization of the Board of Health was effected under act eighty of the Legislature, on the first of May, 1877.

Dr. Samuel Choppin, in his report to His Excellency, Francis T. Nicholls, forthe year 1877, thus alludes to the questions at issue with reference to the resistance to the collection of quarantine fees by certain ship agents and owners:

I take occasion here to point out the necessity for legislative action in some important particulars, for the benefit of our quarantine system. The successful resistance of a number of ship owners to quarantine exactions has seriously diminished the resources of the board, and it is likely to produce still greater damage in the future, unless the basis of charges be modified so as to obviate the constitutional provision forbidding State authorities to levy taxes on tonnage. It is suggested that the fees should be graduated according to work performed; that is to say, proportioned to number of the vessel's company, when visited and inspected by the quarantine physician; and besides a charge for disinfection, when found necessary, which might be graduated upon the same basis.

"While it is desirable to reduce these charges, the board are restricted, in the present terms of the law, from curtailing one principal item of expense; that is, the salaries of the resident physician and his assistant at the Mississippi Quarantine Station. The salaries of these two officers are fixed by law, and amount to $7000, while there is no doubt that the board might, if empowered to make the selection, obtain equally good service, and save from $2000 to $3000 annually in salaries. Another reason for leaving this appointment to the board is, that they are held responsible to the public for the proper administration of quarantine; and, indeed, the principle insisted on is recognized with the other stations, in giving the board full control over the choice and compensation of officers.

"The Board of Health earnestly urge upon the Legislature the importance of memorializing Congress upon the absolute necessity of passing a law authorizing the State to levy tax for quarantine purposes upon all shipping as a matter of self-protection.

"In this connection, I desire to call attention to the necessity of a legislative appropriation for repairs of buildings and construction of fences at the Mississippi Quarantine, and for the erection of suitable buildings at the Rigolets and Atchafalaya, where none now exist. By courtesy of the military authorities, the quarantine physician and his assistant at the Rigolets have been accommodated for several years with quarters at Fort Pike, but aside from the impropriety of thus being dependent on solicited hospitality, it is found that the fort is not the proper place for the quarantine station, which should be near the railroad bridge over the Rigolets, and within plain view of the mouth of West Pearl River. At the Mississippi Station the need of repairs is urgent, to save the buildings from ruin. The estimated cost of repairs and fences for this station is $10,000; for the Rigolets, $2500, and for the Atchafalaya $2500 "—Annual Report of the Board of Health of the State of Louisiana to the General Assembly for the year 1877 (Session of 879(, pp. 15–17.

In his report of 1879, Dr. Choppin again urged upon the General Assembly the necessity of legislating on the subject of quarantine. Thus he says:

"It is necessary to adopt some other basis than tonnage for forming a scale of quarantine fees. The revennes from the Rigolets and Atchafalaya stations are utterly insignificant, owing to the refusal of the owners and masters of vessels to pay any fees, unless they actually have sickness on board. In this course they are sustained by decisions of the Federal courts, and we have no remedy, without modification of the law. I would suggest that the number of people carried by a vessel be made the basis of a scale of fees. Then there would be no tax on tonnage, but an inspection fee granted according to the works actually performed."—*Annual Report of the Board of Health of the State of Louisiana to the General Assembly for the year* 1879 (*Session* 1880), *pp*. 25–36.

*Of the total amount, $33,180 02, expended by the Board of Health during the year 1875, the following sums were paid for printing and stationery: Paid John W. Madden for printing annual report of 1872, $900; lithographing 2000 charts for annual report of 1872, $500; paid for printing and stationery, etc., in full, for the year 1873, $760 30; paid for printing 1000 copies of annual report of 1873, $900; lithographing 2000 charts for annual report of 1873, $500; lithographing 2000 charts for annual report of 1874, $750; printing, stationery, etc., forthe years 1874 and 1875 in full, $1522 30; total, $5832 90.

From the preceding statements by the late Dr. Choppin, it is evident that, during the years 1877, 1878, 1879, to April, 1880, the Board of Health received no specific legislation on the subject of quarantine, and took no steps to raise the injunction obtained, in 1874, by Morgan and others, or to probe the difficulty to the bottom, by conducting the case to the Supreme Court of the United States.

In accordance with the provisions of the Constitution of 1879, the Board of Health was reorganized in April, 1880, after the adjournment of the General Assembly of 1879-1880; and it was impossible to obtain any modification of the existing quarantine law previous to the meeting of the Legislature in May, 1882.

The President, however, brought the subject at issue before the Board of Health, and urged immediate and persistent prosecution of the cases up to the Supreme Court of the United States. A correspondence was conducted by the President with the Chief Executive and quarantine and health authorities of the individual States, in order to obtain all possible information as to the nature and mode of execution of the quarantine laws in the Atlantic and Gulf and Pacific ports of the United States.

The first occasion which offered, for the invocation of legislative action, namely, the Extra Session of 1881, was embraced, and His Excellency, Governor S. D. McEnery, was respectfully urged to bring the subject before the General Assembly; it was, however, wisely decided by the Chief Executive of Louisiana, that the question of quarantine demanded for its consideration and discussion the necessary time and opportunity afforded by the regular sessions prescribed by the Constitution.

The following extracts from the official records of the Board of Health will place in a clear light the efforts which were made by the President to sustain the quarantine laws of Louisiana, and to secure the important and essential support of his Excellency, Governor S. D. McEnery, and of the General Assembly of the State.

To accomplish the most important result, namely, the proper framing of such an act as would remove objectionable expressions and at the same time increase the force and render more effective the quarantine laws of Louisiana, the necessity of employing able legal counsel was urged, and sustained by the Board of Health, as will be shown by the following correspondence:

RESISTANCE OF THE MARITIME ASSOCIATION OF NEW ORLEANS TO THE QUARANTINE LAWS OF THE STATE OF LOUISIANA.

LETTER OF THE PRESIDENT OF THE BOARD OF HEALTH TO HIS EXCELLENCY, S. D McENERY, GOVERNOR OF THE STATE OF LOUISIANA, RELATIVE TO THE NECESSITY OF LEGISLATIVE ACTION.

NEW ORLEANS, December 8, 1883.

Dr. Joseph Jones, President of the Board of Health of this port:

Dear Sir—Herewith we respectfully call your attention to a copy of a communication hereto annexed, and which was submitted to the New Orleans Maritime Association at their meeting last evening and approved, with instructions to us to carry out the suggestions made therein. We deem it proper to first address you on the subject, explaining that the Maritime Association does not wish to interfere in the least with the quarantine officers or their rights or duties, but they do desire that the expenses of examining and passing healthy vessels on their arrival at Quarantine Station shall be paid by the State, where it legally belongs, as customary in other United States ports, and not to be a tax upon vessels and their owners, as imposed upon them in this port. We further add, that we are informed by good authority that for several years past vessels of a certain line coming to this port have not, and still up to this day do not, pay the fees for examining such vessels arriving between sunrise and sunset, as charged for and collected on vessels consigned to us.

We, therefore, respectfully ask that you will cause all such unjust collections to cease, and grant to such vessels the same rights and privileges as now enjoyed by the vessels referred to by the preferred party.

Awaiting your reply, we remain yours respectfully.

COMMITTEE ON ABUSES.
Per Robert Oerlein, Chairman.

Robert Oerlein, Esq., Chairman Committee on Abuses, New Orleans Maritime Association:

Sir—At the present time, and for many years past, the State quarantine officers have been collecting fees from all vessels consigned to us, regardless of condition or port from which they sailed. We believe this illegal and an injury to our port, and ask you to investigate this matter.

We suggest that if the Governor, being informed of this fact, declines to ascertain the legality of such onerous fees, and order such collections to cease, that you proceed to take steps to obtain an injunction against collections that are unconstitutional.

New Orleans, November 24, 1881.

NORTON & BELL, Ship Agents.
A. K. MILLER & CO., Ship and Steamship Agents.
HALL & VAUGHN, Ship and Steamship Agents.
FORSTALL, ROSS & CLAYTON, Ship and Steamship Agents.
JOS. F. LOVELL & CO., Ship Agents.
SILAS WEEKS & CO., Ship and Steamship Agents.

NEW ORLEANS, December 19, 1881.

His Excellency, Governor S. D. McEnery, Governor of the State of Louisiana:

Dear Sir—I have the honor to submit to your Excellency the enclosed communication from the New Orleans Maritime Association of December 18, signed by Robert Oerlein, Esq., Norton & Bell, A. K. Miller & Co., Hall & Vaughn, Forstall, Ross & Clayton, Jos. F. Lovell & Co., and Silas Weeks & Co., ship agents.

It will be seen that the gentlemen composing the New Orleans Maritime Association have determined to resist the laws of Louisiana regulating the entire subject of quarantine.

The law now in force, and upon which the Board of Health has acted since its organization, is as follows: "An act supplementary to an act entitled an act relative to quarantine," approved March 15, 1855.

SEC. 2. *Be it further enacted, etc.*, That the Resident Physician at the Quarantine Station on the Mississippi River shall receive a salary of $5000 per annum, and shall be appointed by the Governor of the State, with the consent of the Senate, and shall be removable at the will of the Governor. It shall be the duty of the Resident Physician or his assistant to visit and inspect every vessel entering the port of New Orleans through the Mississippi River. Vessels free from disease and not in a foul condition, and not from an infected district, which shall be decided upon by the Resident Physician, shall be furnished with a certificate of health, and allowed to proceed to the city. The Resident Physician shall require for every certificate thus furnished the following fees:

Every sailing vessel of 1000 tons and over shall pay $30; every ship of 1000 tons or less shall pay $20; every bark shall pay $15; every brig shall pay $10; every schooner shall pay $7 50; every steamboat (towboats excepted) shall pay $5; every steamship from Florida, Alabama, Mississippi or Texas shall pay $10; every steamship from other ports shall pay $20. The Resident Physician shall return to the Secretary of the Board of Health a weekly list of all vessels inspected by him, as well as all fees collected by him, which shall form a fund for the support of quarantine.

WM. W. PUGH,
Speaker of the House of Representatives.
C. H. MOULTON,
Lieutenant Governor and President of the Senate.
ROBT. C. WICKLIFFE,
Governor of the State of Louisiana.

A true copy:
ANDREW S. HERRON, Secretary of State.

It will be seen that the gentlemen composing the New Orleans Maritime Association pronounce the laws f the State of Louisiana unjust, and demand that the collection of the fees at the Missssippi Qnarautine tation shall cease.

The statement with reference to certain lines of vessels, or vessels of a certain line, refers to certain uits against former Boards of Health. Thus, the following cases were entered in the United States Cir- uit Court in New Orleans:

Charles Morgan vs. Board of Health, No. 7236, in 1874.
John H. Clark et als. vs. Board of Health, No. 7241, in 1874.
C. H. Mallory & Co. et als. vs. Board of Health, No. 7268, September 11, 1874.
Fred. Baker vs. Board of Health, No. 7267, September 11, 1874.

In these cases judgment was rendered *pro confesso*, no defense having been set up by the Board.

At the present moment the former steamship line of Charles Morgan, now represented by Charles A. hitney & Co., hold an injunction against the Board of Health, but, nevertheless, during my term of ice, it has paid a considerable amount toward the support of quarantine.

In view of the preceding facts, I would respectfully submit the following:

1. The commercial prosperity of New Orleans, and of the entire Mississippi Valley, demands that an icient quarantine should at all times, and all seasons of the year, be maintained at the mouth of the Mis- ssippi River.

2. The protection of New Orleans, the State of Louisiana and the entire Mississippi Valley from the roduction of foreign pestilence, as Asiatic cholera, Oriental plague, ship or typhus fever, small-pox, rosy and yellow fever, depend absolutely upon the maintenance of a rigid quarantine at the mouth of Mississippi River.

3. If the quarantine of the Mississippi be allowed to fail, either by a combined effort of the merchants, pmasters and enemies of quarantine and the health and prosperity of the State, the port of New Orleans l be hermetically sealed during six months of the year.

4. New Orleans is becoming a great railroad centre, and the vast interests of the great States concen- ting here demand a rigid and thorough system of quarantine.

The President was authorized to employ the services of Col. Frank Zacharie as his cial counsel, and at the earliest practical moment all laws and acts relating to quaran- e in this and other States were placed in his hands, and in due time the form of a bill be presented to the General Assembly, together with his legal opinion, were perfected l laid before the Board.

The form of the bill: "To fix and regulate quarantine charges at the Mississippi River tion; to establish a lien and privilege on vessels inspected in favor of the Board of lth for the same, and to provide for their enforcement and collection by provisional ure, was adopted by a unanimous vote of the Board of Health, and the President was horized to present the said bill to the General Assembly for adoption.

The President of the Board of Health visited Baton Rouge in person on the tenth of , 1882, two days after the organization of the General Assembly, and delivered the relating to quarantine charges at the Mississippi River, to His Excellency Governor . McEnery, to Hon. George L. Walton, President pro tem. of the Senate, and to Hon. ert N. Ogden, Speaker of the House.

The bill was accompanied by the letter which was published in the Official Journal of House of Representatives:

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA.
New Orleans, May 8, 1882.

Hon. Robert N. Ogden, Speaker House of Representatives, State of Louisiana, Baton Rouge:

Dear Sir—The attention of the Honorable Speaker of the House of Representatives respectfully directed to the enclosed bill, entitled "An act to fix and regulate quarantin charges at the Mississippi River Station; to establish a lien and privilege on vessels in spected in favor of the Board of Health for the same, and to provide for the enforc ment and collection by provisional seizure."

The necessity for prompt and decided action on the part of the General Assembly f the regulation of the quarantine fees for the protection of the State and Mississippi Va ley from the importation of foreign pestilence has been fully demonstrated in the annu report of the Board of Health (pp. 103-109).

The bill now submitted has received the unanimous approval of the Board of Healt

The commercial prosperity of New Orleans and of the entire Mississippi Valley d mands that an efficient quarantine should at all times, and at all seasons of the year, maintained at the mouth of the Mississippi River. The protection of New Orleans, t State of Louisiana, and the entire Mississippi Valley from the introduction of foreig pestilence depends absolutely on the maintenance of a rigid quarantine at the mouth the Mississippi River.

If the quarantine of the Mississippi be allowed to fail by the combined efforts of t merchants, ship-masters and enemies of quarantine, the port of New Orleans will hermetically sealed during six months of the year.

New Orleans is fast becoming a great railroad centre, and all the vast interests of t great States concentrating here demand a rigid and thorough system of quarantine.

Former Legislatures, by their organic acts, have based the support and maintenan of the various quarantine stations of the State absolutely and wholly upon the fees rived from vessels entering the waters of Louisiana.

Two items alone, the salaries of the quarantine physician and his assistant, amou annually to the large sum of $7000. Add to this the pay of the necessary boatm watchman and hospital stewards, nurses, etc., necessary to the proper care of the bui ings and sick, and the necessary fumigation, ten men at $50 per month, equal to $500 month, or $6000 per year; annual repairs and supplies for sick, ship chandlers' suppli disinfectants, ets., at $10,000, and we have a total of about $23,000, actually required maintain the Mississippi Quarantine Station alone.

The actual receipts from the fees collected at the Mississippi Quarantine Station d ing 1880, were $21,872. This sum was inadequate to the support of the quarantine tablishments of Louisiana. In 1881, the receipts amounted to only $18,052, whilst repairs alone upon the Mississippi Station reached $6000, and no provision has been m by the Legislature to meet the necessary expenditures of the Board of Health, for maintenance of an effective quarantine.

The exports of 1880 reached $102,528,376, and the imports $11,809,977; total expo and imports for the year 1880, $14,338,353.

The total amount collected during 1880 from this vast sum for the protection of commerce and health of New Orleans and the Mississippi Valley was $21,872, and 1881 the amount was only $18,052, and owing to the gambling operations in cotton the failure of the grain crop, the quarantine fees of 1882 will fall short of those of 18

The preceding facts relate solely to the mercantile and money value of the questi During the years 1853, 1854 and 1855, New Orleans lost 12,780 of her citizens by yel fever, an imported pestilence, and in 1878 she lost 4056 souls and about $15,000,000 by same scourge.

The State of Louisiana has a right to demand that commerce, which benefits the en valley, and derives its richest rewards from the cotton, sugar and grain of these g Southern and Western States, should pay a sufficient amount for such a syste inspection and disinfection and quarantine as will prevent the introduction of fore pestilence.

It is but just that the immigrants from foreign countries should be taxed a suffic sum for their proper protection from disease and their proper treatment when sick wit the limits of the State.

During the past forty-five years Louisiana has cared for and treated in the Cha Hospital a grand total of 340,411 sick.

Of this vast number foreign countries furnished 260,128 and the various States of Union, 80,289.

Of this vast multitude, equaling more than one-third of the present population of State, Louisiana furnished only 17,013.

The Board of Health of the State of Louisiana relies with confidence upon the wisdom and justice of the General Assembly for the enactment of such laws as will effectually maintain the health of the Mississippi Valley by the efficient support of the quarantine establishments.

I have the honor to remain, with great respect, your obedient servant,

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

In order to expose and defeat the efforts to overthrow the quarantine system of Louisiana, by the owners and agents of steamships and other vessels, and certain parties employed in undermining, misrepresenting and defaming the legal and constitutional labors of the Board of Health of the State of Louisiana, the President addressed the following communication to His Excellency S. D. McEnery, and to Hon George L. Walton, President pro tem. of the Senate, Hon. Robt. N. Ogden, Speaker of the House.*

THE RELATIONS OF THE QUARANTINE ESTABLISHED BY THE STATE OF LOUISIANA IN 1855 TO PURLIC HEALTH AND COMMERCE.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, May 30, 1882.

Hon. R. N. Ogden, Speaker House of Representatives, Baton Rouge, La.:

Dear Sir—The Official Journal of the House of Representatives of the State of Louisiana (twelfth day's proceedings, published in the daily Capitolian-Advocate of May 24, 1882, contains a memorial from certain owners and agents of steamships and other vessels,† certain statements of which demand critical examination.

The memorialists affirm that the bill introduced into the House of Representatives of Louisiana by the honorable chairman of the Committee on Health and Quarantine, entitled "An act to fix and regulate quarantine charges at the Mississippi River Station, etc., plainly and palpably violates at least two provisions of the United States Constitution, and in its tendency to prejudice our growing commerce, is materially subversive of the best interests of Louisiana."

It has been shown in the annual report of the Board of Health of the State of Louisiana for 1881 (Introduction, p. 8), and also by the learned counsel of the board in a legal opinion now in the hands of the honorable Committee on Health and Quarantine, that the quarantine laws of Louisiana are not in conflict with the Constitution of the United States, and that they form part of that immense mass of legislation which embraces everything in the territory of Louisiana not surrendered to the General Government. It has been shown that inspection laws, quarantine laws, health laws of every description as well as laws for regulating the internal commerce of a State, and those which respect turnpike roads, ferries, are regulations of police rather than of commerce in the constitutional understanding of that term.

This feature of the proposed act to fix and regulate fees at the Mississippi Quarantine Station having been referred to the Judiciary Committee of this honorable body, will not be further discussed; but we will confine our attention chiefly to the assertion made by certain owners and agents of steamships in New Orleans, that this bill tends to prejudice our growing commerce, and is materially subversive of the best interests of Louisiana, and imposes heavy additional charges against an interest already heavily burdened.

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* This protest was signed by the following ship and steamship agents in New Orleans: R. B. Post Son, Agents Tampa Steamship Company; Charles A. Whitney & Co., Morgan's Louisiana and Texas Railroad and Steamship Company; Forstall, Ross and Clayton, Agents French Canadian Line of Steamships; Silas Weeks, Ship and Steamship Agents; A. K. Miller & Co., Ship Agents; Edw. A. Yorke, p. p. Richard H. Crawford, Agents New York, Havana and Mexican Steamship Line; Alfred Moulton & Co., Cromwell Steamship Line; Norton & Bell, Ship and Steamship Agents; L. LaCombe & Co., Ship and Steamship Agents; Lucas E. Moore & Co., Agents Harrison's Line; T. & G. Forwood, agents W. L. and P. Steamship Line; Ed, F. Stockmeyer & Co., Agents North German Lloyd; Shultz & Co., Ship Agents; A. French & Co., Steamship Agents; Louis Ranger & Co., Agents Steamship Line; S. A. Cosulich, Ship Agent; Jos. T. Lovell & Co., Ship and Steamship Agents; Joseph Kelly, Ship Broker; S. Oteri; Macheca Bros., Managers N. O. and B. R. M. Steamship Line; Hall & Vaughan, Steamship and Ship Agents.

† This communicgtion was referred to the Committees on Health and Quarantine in the House and Senate and was not read, and did not appear upon the official journal of the General Assembly. Notwithstanding that the memorial of the ship agents and maritime men of New Orleans, attacking the quarantine system of Louisiana, together with the protests against the substitutes for the quarantine bill, by various members of the General Assembly, were read and published in full in the official journal of the House of Representatives.

In this emergency, service of no ordinary value was rendered by the Daily New Orleans Picayune in the prompt publication of the exposition of the relations of quarantine to commerce, and the distribution of the views held by the Board of Health as to its official duties and powers on this important subject, to every member of the Senate and House of Representatives.

It has been well said that no city in the world occupies a more important commerci position than New Orleans. Situated on the most important point on the Mississippi b tween the shores of the Gulf of Mexico and the borders of the great lakes, New Orlea holds communication with all the great ports of Europe and America, and furnishes the with the vast supplies drawn from the great valley, bounded by the Alleghanies and tl Rocky Mountains, comprising an area of 2,455,000 square miles, extending through thirt degrees of longitude and twenty-three of latitude.

No city in the world has suffered more obloquy than New Orleans in relation to healtl and more especially in regard to its epidemics of yellow fever; and however devoid sanitary laws and hygienic regulations, and however filthy and neglected the towns an cities situated within the Valley of the Mississippi and its tributaries have been in tim past, they have ever sought to lay their own devastating epidemics at the door of th great commercial centre.

The rapidly advancing millions of the great valley look with increasing interest upo the sanitary condition and quarantine laws and regulations of New Orleans.

It will not be beyond the bounds of truth to affirm that, but for yellow fever, New O leans, even at this day, after the ravages of civil war, and the ruthless plundering of h hostile rulers, would have exceeded every other city of America in the magnitude of h imports and her exports.

5. The former Lesislatures, by their organic acts, have based the support and maintenance of the vario quarantine stations of the State absolutely and wholly upon the fees derived from vessels entering t waters of Louisiana. Two items alone, namely, the salaries of the quarantine physician and his assistar amount annually to the large sum of $7000. Add to this the pay of the necessary boatmen, watchmen a hospital stewards, nurses, etc. necessary to the proper care of the buildings and sick, and the necessa fumigation, ten men at $50 per month, equal to $500 per month, or $6000; annual repairs and supplies for sic ship-chandlers' supplies, disinfectants, etc. $10,000; and we have a total of about $23,000 actually required maintain the Mississippi Quarantine Station alone.

The actual receipts from the fees collected at the Mississippi Quarantine Station have been during t past year (1880) $21,872. This sum has been inadequate to the support of the quarantine establishments Louisiana; and for the repairs of 1881, amounting to $6000, for the Mississippi Quarantine Station. no adequ provision has been made by the Legislature.

The exports of 1880 reached $102,528,376, and the imports $11,809,977; total exports and imports, $114,338,3

The total amount collected from this vast sum for the protection of the commerce and health of New leans and the Mississippi Valley was $21,872.

It is not true that the quarantine charges and expenses are higher in New Orleans than any other port the United States.

The preceding facts relate solely to the mercantile and money view of the question. But when we member that during three years—1853, 1854 and 1855—New Orleans lost 12,780 of her citizens by yellow fev an imported pestilence, and that only four years ago she lost 4056 souls, and about $15 000,000 by this sa scourge, the action of the Maritime Association with their aids and abettors, in their attempt to destroy quarantine system of Louisiana, is seen in its true light.

But arguments and explanations avail nothing with men who are willing to resist the laws, thereby avoid the payment of the just quarantine dues established by the General Assembly of Louisian and who are willing to break down every barrier against the importation of foreign pestilence and to utte destroy at once the health and commercial prosperity of the State, in an effort to avoid the payment of a f dollars.

The State of Louisiana has a right to demand that commerce, which benefits the entire Valley and deri its richest reward from the cotton and grain of these great Southern and Western States, should pay a su cient amount for such a system of inspection and disinfection and quarantine as will prevent the introd tion ot foreign pestilence.

It is but just that the immigrants from foreign countries should be taxed a sufficient sum for their pro protection from disease and their proper treatment when sick, within the limits of the State.

During the past forty-five years Louisiana has cared for and healed in the Charity Hospital a grand to of 340,411 sick. Of this vast number foreign countries furnished 260,120, and the various States of the Un 80,280. Of this vast multitude, exceeding by more than one-half the present population of this city, Lou iana furnished only 17,913. The State, in addition to 260,220 foreigners, has cared for 53,570 sick and de tute poor within the walls of her charitable institutions, the vast proportion of which came from s States as Alabama, Kentucky, Iowa, Ohio, Pennsylvania, New York, North Carolina, Virginia, Mississip Tennessee, Missouri; 41,611 natives of New York and 7462 natives of Pennsylvania have been treated wit the Charity Hospital,

In conclusion, I would most respectfully suggest that, if it should be deemed necessary to prolong extra session of the Legislature, that your Excellency should embrace in the call the important subject the quarantine.

The question will be solved by the united wisdom of the Chief Executive and General Assembly, an feel assured that it will be possible to devise means by which the quarantine laws may be either promp vindicated or so modified as to render their induction and invasion upon any technical terms utterly possible.

With great respect and high esteem, I have the honor to remain your obedient servant.

JOSEPH JONES M. D., President Board of Health, State of Louisiana

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OFFICE BOARD OF HEALTH, STATE HOUSE, STATE OF LOUISIANA
NEW ORLEANS, December 12, 1881.

Robert Oerlein, Esq.:

Sir—In reply to your communication of the eighth instant, inclosing a resolution by the New Orle Maritime Association, signed by Norton & Bell, A. K. Miller & Co., Hall & Vaughn, Forstall, Ross & Cl ton, Jos. F. Lovell & Co., Silas Weeks & Co., I have the honor to refer you to the enclosed organic ac the Legislature of Louisiana.

Respectfully yours, JOSEPH JONES M. D., President Board of Healtl

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The vast burden which has been imposed upon the State of Louisiana, and more especially upon m edical profession of New Orleans, in virtue of the position of this State at the mouths of the Mississi

TABLE B.

Showing the Foreign Countries and States of the American Union from which the Patients annually admitted into the Charity Hospital of New Orleans, Louisiana, United States of America, have come, and the Number from each, during a Period of Forty-five Years, 1830-1880, collected, classified and consolidated from original reports and documents, by Joseph Jones, M. D., New Orleans, 156 Washington street, corner of Camp, January 1, 1882.

STATES, TERRITORIES, ETC.	1830	1831	1832	1833	1834	1835	1836	1837	1838	1839	1840	1841	1842	Total 13 Yrs.
Alabama	5	3	1	4	6	3	10	8	9	9	9	5	6	78
Arkansas		3	1	2	1	1		1			3	1		13
California														
Connecticut	24	27	27	36	40	38	31	51	24	23	25	17	12	384
Delaware	9	7	2	7	25	17	22	20	20	3	11	12	9	164
District of Columbia	10	15	10	6	12	5	6	13					1	78
Florida	2	1	1	1	1	2	3	[illegible]	3	2	1	1	4	21
Georgia	11	17	9	7	10	12	14	20	11	8	10	9	17	164
Illinois	5	71	1	2	2	7	2	4	6	7	6	8	3	121
Indiana	82	77	1	7	10	11	7	12	21	12	8	8	10	266
Indian Territory														
Iowa														
Kansas														
Kentucky	69	67	23	62	93	113	45	96	69	70	72	44	50	879
Louisiana	51	59	40	29	49	30	62	51	33	40	40	38	34	556
Maine	51	57	40	62	52	51	58	58	54	45	67	35	45	667
Maryland	86	83	55	82	81	82	82	87	45	62	56	58	42	910
Massachusetts	106	115	80	110	148	120	90	126	98	109	78	66	77	1,359
Michigan	2	2	1	3		1	3	4	7	1				24
Minnesota														
Mississippi		14	4	8	9	6	8	12	14	8	13	7	9	112
Missouri	6	52	6	9	10	12	7	15	24	15	12	9	8	198
New Hampshire	19	24	11	23	35	32	15	36	17	31	9	14	9	275
New Jersey	43	44	31	30	38	51	34	41	26	28	20	19	10	410
New Mexico														
New York	185	221	106	213	201	288	254	310	285	265	253	189	200	3,059
North Carolina	47	51	40	36	63	57	52	64	27	20	16	32	26	531
Ohio	34	39	22	43	87	63	106	110	64	78	60	53	57	855
Oregon														
Pennsylvania	234	381	111	253	278	269	304	294	175	172	100	201	136	3,002
Rhode Island	34	37	20	23	25	14	15	28	17	9	14	11	9	259
South Carolina	30	39	15	23	40	39	35	50	23	21	20	22	20	413
Tennessee	42	45	25	39	69	68	81	70	15	21	40	40	23	586
Texas														
Utah														
Vermont	12	18	17	15	23	41	21	29	14		1	13		204
Virginia	131	135	71	108	149	117	141	[illegible]	70	109	57	71	93	1,447
Wisconsin														
West Virginia														
At Sea (U. S.)														
Unknown														
Total United States	1,336	1,704	771	1,245	1,677	1,610	1,512	1,797	1,180	1,172	1,126	980	941	17,051
FOREIGN COUNTRIES.														
Africa	3	5	4		6				7		1		1	27
Antigua Islands														
Arabia														
Asia														
At Sea														
Australia														
Austria										2		3	5	10
Azores' Islands														
Barbadoes														
Bavaria											7	3	1	11
Belgium										2	1	2	10	15
Bermuda Islands														
Bohemia														
Brazil											1		1	2
British Possessions, N. A.														
Buenos Ayres														
Canada	8	24	10	24	30	67	42	8	32	41	37	43	42	420
Canary Islands														
Cape de Verde Islands														
Cape Good Hope														
Central America														
Chili														
China											3	2	2	7
Corsica														
Cuba	12	17	3	5	3	11	4	23	1				1	87
Denmark	19	10	8	13	38	44	42	41	19	27	38	31	37	369
East Indies	1	5	3	2	4	4	10	2	1	2	1	1	4	40
Elba														
England	251	314	222	343	418	443	378	410	313	443	301	215	220	4,397
Finland												3	1	4
France	119	109	172	253	202	278	202	270	154	332	314	383	279	3,240
Germany	120	201	111	378	503	575	262	647	451	662	647	425	570	5,537
Gibraltar														
Greece											4	3	3	10
Guatemala														
Hayti										3			1	4
Hannover											3	6		9
Helgoland														
Hindostan														
Holland	12	10	10	10	11	49	34	26	10	6		4	14	201
Honduras														
Hungary										1	1			2
Ionian Republic														
Isle of Man											2			2
Ireland	660	915	842	1,200	2,354	2,470	1,544	2,149	1,471	1,601	1,950	1,770	1,702	20,732
Italy	11	5	12	43	53	41	35	54	47	58	71	43	51	524
Jamaica														
Jersey Islands														
Madeira														
Malaga														
Malta														
Manilla														
Martinique														
Mexico	30	21	22	14	10	31	11	10	6	13	13	6	12	199
New Brunswick												3	3	6
New Foundland										2	1		1	4
New Holland														
New South Wales											1			1
New Zealand														
Orkney Islands														
Norway	10	15	11	14	29	22	19	27	11	13	14	11	8	204
Nova Scotia	5	3	2						6		17	8	3	50
Netherlands														
New Providence														
Palestine											1			1
Persia														
Peru	10	20	5	17	15	18	18	4		1			2	116
Poland	12	7	6		5	40	16	14	6	8	17	7	11	149
Phillippine Islands														
Portugal	8	10	12	15	12	31	15	14	20	44	19	29	19	248
Prince Edward's Island														
Prussia	2	49	12	16	22	26	25	26	16	13	17	18	27	269
Prussian Poland														
Russia													1	1
Russian Poland														
San Domingo														
Sandwich Islands											2		1	3
Sardinia											2		6	8
Scotland	86	95	93	123	178	174	168	186	146	106	50	93	85	1,583
Shetland														
Sicily												3	1	4
South America														
Spain	82	196	82	113	162	148	135	168	114	153	105	70	57	1,585
St. Helena														
St. Thomas														
Sweden	65	25	26	56	83	45	70	82	49	60	45	42	26	674
Switzerland	5	4	14	4	34	29	30	40	20	28	17	14	23	298
Turkey														
Tuscany												1		1
Van Dieman's Land														
Venezuela														
Wales									5	23	14	12	9	63
West Indies	5	9	16	15	27	38		31			8	6	12	167
Western Islands														
Wight Islands														
Wurtemberg														
Yucatan														
All other Countries						10	28	2	211	17	121	106	92	587
Total Foreign Countries	1,564	2,174	1,710	2,706	4,295	4,593	3,095	4,197	3,116	3,661	3,936	3,376	3,449	41,872
Total United States	1,336	1,704	771	1,245	1,677	1,610	1,512	1,797	1,180	1,172	1,126	980	941	17,051
Total Foreign Countries	1,564	2,174	1,710	2,706	4,295	4,593	3,095	4,197	3,116	3,661	3,936	3,376	3,449	41,872
Grand Total	2,900	3,878	2,481	3,951	5,972	6,203	4,607	5,994	4,296	4,833	5,062	4,356	4,390	58,923

STATES, TERRITORIES, ETC.	1843	1844	1845	1846	1848	1849	1850	1852	1853	1854	1855	1856	1857	1858	1859	1860	Total 16 Yrs.
Alabama	8	4	7	11	11	23	18	26	19	29	25	27	49	33	34	47	371
Arkansas	4	1	2	9	1	3	2	2	4	6	1	2	5	2	4	8	56
California						2											2
Connecticut	19	21	26	38	38	24	23	29	15	21	11	9	12	18	18	11	336
Delaware	11	8	15	13	9	15	12	10	8	7	8	2	3	8	5	3	137
District of Columbia	7	10		5	9	9	11	4	6	5	7	5	9	6	12	8	113
Florida	1		4	4	11	5	6	3	2	3	8	2	9	13	9	13	93
Georgia	14	12	17	20	24	29	26	21	27	30	21	32	35	39	27	31	402
Illinois	2	7	12	12	13	14	12	19	12	16	18	15	19	16	36	48	273
Indiana	18	13	24	29	24	23	27	24	10	23	16	11	21	23	24	28	337
Indian Territory																	
Iowa					1	1	3	1		1	2			2	8	3	22
Kansas																3	3
Kentucky	64	70	66	114	75	95	77	55	53	70	45	61	89	88	75	111	1,208
Louisiana	59	113	119	145	111	147	264	248	228	252	328	349	394	360	377	433	3,927
Maine	38	46	43	67	84	92	73	64	61	42	32	26	32	66	54	58	878
Maryland	58	80	64	87	73	76	72	65	57	65	34	51	47	73	63	49	994
Massachusetts	81	80	76	91	144	115	110	111	44	98	71	71	65	88	108	142	1,495
Michigan		1	1	1	2	2	2	3	4	1	4	4	7	19	6	19	76
Minnesota															1	4	5
Mississippi	6	10	11	26	7	19	13	11	18	23	30	19	35	18	28	51	325
Missouri	7	22	18	23	13	30	39	30	25	27	30	24	24	31	53	84	460
New Hampshire	19	28	21	21	28	20	21	21	12	10	12	4	7	11	14	12	264
New Jersey	21	26	22	29	42	27	37	41	25	22	18	13	16	27	25	33	450
New Mexico																	
New York	222	262	231	320	342	400	395	366	253	288	247	226	241	324	453	477	5,047
North Carolina	24	20	30	65	34	35	28	29	23	31	25	27	61	26	28	34	538
Ohio	55	97	113	105	81	86	90	118	79	80	71	68	69	87	113	125	1,437
Oregon																	
Pennsylvania	189	211	217	249	205	234	195	166	151	145	100	135	132	152	194	219	2,904
Rhode Island	4	9	1	15	20	27	22	20	11	11	6	12	4	17	14	6	222
South Carolina	29	21	26	46	45	39	44	5	17	25	22	32	28	29	39	25	475
Tennessee	27	31	40	69	46	67	51	57	38	37	35	43	47	48	69	47	752
Texas				1		2	1	11	3	5	3	3	7	10	13	10	69
Utah																	
Vermont	11	13	11	25	15	21	22	28	11	11	7	9	9	14	13	14	247
Virginia	93	[illegible]	100	130	72	97	97	85	62	118	47	81	97	100	89	113	1,469
Wisconsin						1	1	1	1	1	4	1	4	3	8	5	30
West Virginia																	
At Sea (U. S.)																	
Unknown	1		4			2		20	20								47
Total United States	1,092	1,316	1,350	1,773	1,579	1,782	1,774	1,709	1,306	1,502	1,288	1,369	1,577	1,751	2,014	2,272	25,454
FOREIGN COUNTRIES.																	
Africa	1		1	1	4	1	2		1	2	1		2	1		1	18
Antigua Islands																	
Arabia																	
Asia											1						1
At Sea																	
Australia															1		1
Austria	3	7	15	29	35	38	79	69	54	57	83	63	58	80	114	88	872
Azores' Islands												1	6	22			29
Barbadoes																	
Bavaria	2																2
Belgium		11	11	22	22	23	17	36	33	57	36	35	30	35	35	35	438
Bermuda Islands																	
Bohemia								49	8	14		5	3	6			85
Brazil		1		1	1		1	2	4					1			11
British Possessions, N. A.					33	41	34	31		36	23		10				208
Buenos Ayres		1							1								2
Canada	36	51	41	80	55	76	86	85	68	67	73	49	47	72	131	183	1,203
Canary Islands		2						3		2	2	5	3				17
Cape de Verde Islands																	
Cape Good Hope																	
Central America												1	1	4			6
Chili	1	1		3	4	3	3			4		3	3			3	28
China			1		2	1	1							1	5		11
Corsica							1	2	2					3	6	1	15
Cuba	5	2			2												9
Denmark	28	47	25	42	107	94	95	63	61	82	94	38	29	63	79	73	1,020
East Indies	4	3	4	4	2	6	4	26	16	14	2			1		7	93
Elba												1					1
England	281	340	330	369	560	731	775	567	519	459	335	329	347	463	591	629	7,643
Finland																	
France	354	350	357	506	621	685	852	993	843	1,082	1,150	792	664	876	742	771	11,638
Germany	851	607	710	1,100	1,462	1,742	1,972	2,352	2,291	2,784	2,840	1,402	1,214	1,938	1,748	2,279	27,292
Gibraltar								2	3								5
Greece	5	2	3	3	4	2	1	13	13	7	6	2	5	12	2	4	84
Guatemala	2																2
Hayti		2	3	3	1												9
Hannover																	
Helgoland															1	1	2
Hindostan												2	2	1			5
Holland	7	[illegible]	13	25	41	33	40	37	22	20	32	21	21	31	26	41	424
Honduras																	
Hungary					2			3	4	16	12	5	16	10	4	1	73
Ionian Republic										1	1						2
Isle of Man	3							9	3					3	3	1	22
Ireland	1,864	2,317	2,477	3,107	6,232	8,678	11,132	10,195	7,217	5,491	4,786	4,287	4,010	4,568	5,888	6,416	88,663
Italy	39	50	40	28	25	31	28	35	24	46		14	33	34	25	73	535
Jamaica																	
Jersey Islands								5	1	2	2	2	1		2		15
Madeira									3	3		6	6	7	1		26
Malaga	1							3	4	3	2	6	3		[illegible]	1	29
Malta	4	5	6	6	5	5	4	7	10	2		2		5	6	1	68
Manilla		1						7	7			3	3	7	[illegible]		33
Martinique					1												1
Mexico	21	14	15	14	49	46	28	25	25	26	30	15	14	36	31	38	427
New Brunswick	4	5	5						5			4	12	5	24	5	69
New Foundland			4		4		4		5			[illegible]	2			2	28
New Holland									1		4		2				7
New South Wales																	
New Zealand									1	3							4
Orkney Islands								1	2		1	1		1	4		10
Norway	8	12	14	25	39	42	32	29	26	19	37	26	13	21	33	30	406
Nova Scotia	11	10	10						10	22		21		12	15	8	119
Netherlands																	
New Providence																	
Palestine																	
Persia		2				1								2			5
Peru		3	1	1			2			2			1				10
Poland	7	12	6	14	13	16	31	12	7	23	24	10	8	14	17	9	223
Phillippine Islands																	
Portugal	19	47	49	47	58	64	75	45	15	23	11	18	10	16	18	26	566
Prince Edward's Island									4			1					5
Prussia	25	83	141	240	290	414	440	554	415	520	501	353	297	523	514	255	5,565
Prussian Poland								7	10			2	13	10	31	12	85
Russia	1	9	3	5	7	12	12	12	3	2	6	6	5	9	5	8	105
Russian Poland									2			5		17		5	29
San Domingo																	
Sandwich Islands			1							3							4
Sardinia	2	7	9	14	41	52	53	63	45	19	54	52	61	93	34	36	635
Scotland	92	141	128	152	170	258	267	252	144	153	125	118	94	140	193	221	2,648
Shetland														1	1		2
Sicily	14		9		10	4	17	17	23	11	60	7	13	26	8	6	234
South America		2								6							8
Spain	88	93	131	194	132	130	118	73	56	71	96	52	36	74	67	83	1,494
St. Helena			1				2										3
St. Thomas																	
Sweden	28	61	41	64	102	98	72	64	74	59	37	30	26	53	66	100	974
Switzerland	19	60	74	130	183	363	282	253	195	314	319	182	139	215	225	222	3,205
Turkey	1								3	4	1			4		1	14
Tuscany									2	2		5	7			6	22
Van Dieman's Land																	
Venezuela			2			1		2									5
Wales	22							31	15		12	13	11	6		1	111
West Indies	18	15	16	14	12	19	19	5	16	22	13	21	17	22	16	5	250
Western Islands								9	11	19	28	10			18	9	104
Wight Islands								1	1	1		1			1		5
Wurtemberg																	
Yucatan											4						4
All other Countries	50	73	84	24	86	43	121	274	120	80	51	30	28	38	16	31	1,155
Total Foreign Countries	3,921	4,530	4,786	6,271	10,366	13,776	16,702	16,322	12,453	11,690	10,904	8,063	7,326	9,586	10,761	11,728	159,185
Total United States	1,092	1,316	1,350	1,773	1,579	1,782	1,774	1,709	1,306	1,502	1,288	1,369	1,577	1,751	2,014	2,272	25,454
Total Foreign Countries	3,921	4,530	4,786	6,271	10,366	13,776	16,702	16,322	12,453	11,690	10,904	8,063	7,326	9,586	10,761	11,728	159,185
Grand Total	5,013	5,846	6,136	8,044	11,945	15,558	18,476	18,031	13,759	13,192	12,192	9,432	8,903	11,337	12,775	14,000	184,639

STATES, TERRITORIES, ETC.	1864	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	Total 16 Yrs.	Total 45 Yrs.
Alabama	58	65	56	52	112	108	106	84	101	89	94	112	132	92	115	111	1,453	1,942
Arkansas	5	4	5	5	15	17	14	14	15	12	10	16	15	7	5	6	165	234
California		1				2	1	1	2	2	1		2	5	2	2	21	23
Connecticut	25	13	15	12	9	18	16	8	6	11	6	8	7	4	9	6	173	893
Delaware	6	6	11	3	11	5	4	3	1	3	3	2	5	4	5	2	74	375
District of Columbia	2	8	12	3	12	9	8	10	9	8	10	15	8	20	14	8	156	347
Florida	8	33	7	13	21	20	14	8	7	11	11	12	10	20	25	15	235	452
Georgia	45	44	39	37	61	72	47	52	52	60	36	60	49	72	35	56	817	1,383
Illinois	14	44	32	16	25	40	35	22	10	20	22	31	35	34	37	22	435	832
Indiana	27	33	25	16	13	30	19	15	15	11	28	22	22	29	25	26	356	959
Indian Territory									1			1					2	2
Iowa	2	8	2	2	2		4	6	2	2	7		2	8	5	3	55	77
Kansas		2						1	1	1		2	2				9	12
Kentucky	46	112	100	66	155	207	139	164	135	142	115	107	168	114	145	88	2,003	4,090
Louisiana	623	544	547	524	847	723	671	631	672	764	866	1,015	1,047	1,020	1,017	1,019	12,530	17,013
Maine	123	65	71	20	21	34	18	14	12	19	15	15	22	124	17	9	599	2,144
Maryland	28	91	64	65	95	116	91	77	75	63	63	84	76	95	80	70	1,233	3,137
Massachusetts	61	104	73	45	59	62	44	31	30	24	22	56	36	41	57	41	786	3,640
Michigan	2	5	9	1	8	15	4	6	4	7	6	9	11	13	4	13	117	217
Minnesota	1	1				1	2		3	1			1	2	3	2	17	22
Mississippi	160	80	65	62	157	142	139	123	107	124	123	153	134	165	171	125	2,030	2,467
Missouri	26	75	74	37	91	94	98	86	78	72	62	89	75	92	92	77	1,210	1,868
New Hampshire	19	10	5	4	2	7	8	12	4	3	2	4	6	5	3		94	633
New Jersey	15	30	29	20	13	9	24	14	8	16	9	15	15	13	15	6	251	1,111
New Mexico	2										1			2			5	5
New York	252	448	363	186	242	241	263	197	156	118	129	184	211	176	171	128	3,505	11,611
North Carolina	29	22	23	23	74	80	82	57	52	64	65	69	49	55	54	58	886	1,955
Ohio	66	80	85	58	85	101	82	54	58	51	56	87	87	88	63	51	1,152	3,444
Oregon										1							1	1
Pennsylvania	82	161	154	82	112	156	105	82	57	79	57	98	65	105	82	79	1,556	7,462
Rhode Island	6	21	19	8	3	9	8	8	1	8	5	2	5	3	3	7	116	597
South Carolina	22	40	30	28	78	81	71	44	50	65	56	46	45	51	43	32	782	1,670
Tennessee	35	71	67	28	90	107	105	106	75	75	61	73	100	77	72	61	1,203	2,541
Texas	20	31	27	30	22	23	21	20	29	31	25	26	31	22	25	25	410	479
Utah																		
Vermont	15	11	11	2	5	2	7	7	3	1	1	5	2		5	3	80	531
Virginia	65	106	77	88	247	302	264	264	192	229	227	268	244	234	194	179	3,180	6,096
Wisconsin	1	5	2	1	1	13	2	2	2	1	5	5	11	6	11	5	73	103
West Virginia											1			5	4	1	11	11
At Sea (U. S.)														2	4	3	9	9
Unknown			1	1					10	13		7		2		14	48	95
Total United States	1,891	2,394	2,100	1,538	2,678	2,886	2,518	2,253	2,035	2,201	2,199	2,691	2,720	2,709	2,612	2,353	37,778	80,283
FOREIGN COUNTRIES.																		
Africa	4		4	1	6	9	2	2	8	5		7	3	5	2	4	62	107
Antigua Islands		1															1	1
Arabia					1		6		1			1	5	2			16	16
Asia							1				1	1	1				4	5
At Sea	2	7	5	4	9	3	3	5	9	1		2	1	6		3	60	60
Australia		3		1	2	2	1						1	13	1	4	28	29
Austria	22	95	121	55	25	23	22	17	28	25	20	22	29	31	20	19	574	1,456
Azores' Islands																		29
Barbadoes	4									3	1			1			9	9
Bavaria				4	4					1	12	9	24	17	20	2	93	106
Belgium	21	35	30	21	20	24	8	11	18	17	9	13	20	17	6	10	282	735
Bermuda Islands									1	1				1			3	3
Bohemia											3	1	1	2	6	4	17	102
Brazil		1	2	3	1				2		1			1			11	24
British Possessions, N. A.								1							2	1	4	212
Buenos Ayres																		2
Canada	68	154	95	43	64	79	90	61	48	48	39	49	49	57	38	38	1,020	2,643
Canary Islands				1					1		2	1					5	22
Cape de Verde Islands		1								1	2					1	5	5
Cape Good Hope		2	1	1													4	4
Central America																		6
Chili		1	1	1	2	1											6	34
China	1	1	4	1	4	12	35	44	31	38	22	28	24	20	42	22	329	347
Corsica							1				1					4	6	21
Cuba	5									2	8	7	6	8	5	11	52	158
Denmark	19	64	59	18	26	42	42	31	28	15	17	15	24	22	13	18	453	1,842
East Indies		3	1	1			3	1	1					1			14	147
Elba																		1
England	158	427	455	203	193	337	298	211	225	209	162	221	194	223	147	204	3,867	15,007
Finland	1				6	8	9	9	7	8	5	14	4	4	14	4	93	97
France	328	437	434	311	267	391	250	252	240	316	301	325	319	270	231	238	4,910	19,788
Germany	411	994	951	518	604	1,084	780	729	735	645	520	581	606	596	418	454	10,626	43,455
Gibraltar	1	2						2	1								6	11
Greece	1	7	16	12	3	4		4	3	10	8	3	6	12	8	3	100	194
Guatemala																		2
Hayti																		13
Hannover						1							4	18	19	6	48	57
Helgoland																		2
Hindostan																		5
Holland			28	16	10					3	11	16	13	10	15	4	126	751
Honduras																1	1	1
Hungary				2	5	9	8	1	4	1	4	10	6	11	8	10	79	154
Ionian Republic																		2
Isle of Man		2							1	1	3		3	4			14	38
Ireland	1,541	3,564	3,079	1,691	1,837	2,290	2,069	1,489	1,255	1,285	1,157	1,337	1,543	1,357	1,147	1,061	27,702	137,099
Italy	37	71	104	77	50	68	47	53	55	61	68	69	78	67	53	75	1,032	2,091
Jamaica	1										2		7	1	2	5	18	18
Jersey Islands																		15
Madeira	3			1	1	10	2				2	1		1	4		25	51
Malaga																		29
Malta	3	6		2	2		8	1	7	11	1	11	9	13	4	3	81	149
Manilla	1							3	2	3	1	2	5	15	20	2	54	87
Martinique																		1
Mexico	10	22	43	28	19	19	19	8	13	17	13	12	7	11	10	13	264	890
New Brunswick	7	13	26	5	9	16	7	8	6	7	4	2	3		11	3	129	204
New Foundland		5	8	3	6	8	3	3	5	3	6	2	2		3	7	64	96
New Holland																		7
New South Wales																		1
New Zealand							1								1	1	3	7
Orkney Islands										1							1	11
Norway	15	36	29	11	24	21	25	12	18	18	17	17	17	13	15	19	307	917
Nova Scotia	13	26	14	6	15	17	11	3	9	5	6	10	12	5	12	3	167	336
Netherlands	[illegible]	5	4							1					1		19	19
New Providence	4	2	1		1					4	3	2	1	1			19	19
Palestine																		1
Persia				1												1	2	7
Peru		1		1													2	128
Poland	4			8	8	11	14	14	9	2	3	7	12	8	8	3	111	483
Phillippine Islands	1					2			1		1		2	3			10	10
Portugal	13	21	12	7	7	11	7	49	26	33	20	21	17	11	10	15	280	1,094
Prince Edward's Island			3	1		1			1			3	5	1			15	20
Prussia	74	345	360	109			5				1		30	55	34	33	1,046	6,880
Prussian Poland																		85
Russia	2	35	53	18		8		2	2		5	3	6	5	10	7	156	262
Russian Poland																		29
San Domingo	2									1	2		3	1	1	1	11	11
Sandwich Islands		1	2	1										1			5	12
Sardinia																		643
Scotland	60	146	144	62	81	114	80	78	68	49	41	56	47	74	52	49	1,201	5,432
Shetland								4		3	2						9	11
Sicily		1									2		2	4		4	13	251
South America	1				1			4		4	1			1			12	20
Spain	26	67	162	57	37	46	43	32	30	29	26	29	27	18	35	25	698	3,777
St. Helena					1										1		2	5
St. Thomas	1									1	1		1	3	1		8	8
Sweden	24	85	59	40	46	78	69	38	31	28	30	24	30	44	36	40	702	2,350
Switzerland	42	168	123	53	43	106	86	61	60	71	58	42	47	63	60	63	1,146	4,649
Turkey				1			3						1	2	4		11	25
Tuscany																		23
Van Dieman's Land					1					1							2	2
Venezuela																		5
Wales	7	17	24	5	10	21	8	5	4	5	4		5	9	4		128	302
West Indies	6	26	27	11	23	27	24	23		10	3	3	5	3	3	12	216	633
Western Islands	11	7	1	2	2	6	1		15	1	2		1	2	1	3	55	159
Wight Islands																		5
Wurtemberg														5	12		17	17
Yucatan	1																1	5
All other Countries	4	20	28	25	18	42	38	21	30	29	13	19	14	13	66	18	398	2,140
Total Foreign Countries	2,970	6,927	6,512	3,443	3,499	4,951	4,133	3,288	3,055	3,030	2,646	2,999	3,282	3,169	2,636	2,531	59,071	260,128
Total United States	1,891	2,394	2,100	1,538	2,678	2,886	2,518	2,253	2,035	2,201	2,199	2,691	2,720	2,709	2,612	2,353	37,778	80,283
Total Foreign Countries	2,970	6,927	6,512	3,443	3,499	4,951	4,133	3,288	3,055	3,030	2,646	2,999	3,282	3,169	2,636	2,531	59,071	260,128
Grand Total	4,861	9,321	8,612	4,981	6,177	7,837	6,651	5,541	5,090	5,231	4,845	5,690	6,002	5,878	5,248	4,884	96,849	340,411

River, and in virtue of the vast number of foreign emigrants passing through the gateway of the Mississippi Valley, is clearly shown by the statistics recorded in the tables, marked A and B.—Annual Report, 1881.

The table marked B exhibits the foreign countries and States of the American Union from which the patients annually admitted into the Charity Hospital of New Orleans have come, and the number from each, during a period of forty-five years—1830-1880—and in addition to the facts stated in the preceding letter to his Excellency, S. D. McEnery, it should be noted that England contributed 15,907, France 19,788, Germany 45,435, Prussia 6880, Scotland 5438, Spain 3777, Sweden 2350, Switzerland 4649, Canada 2693 and Ireland 137,669 patients to the Charity Hospital. Total from these countries, 252,645.

Ireland alone has furnished eight times more patients to the Charity Hospital than Louisiana.

If the annual cost of maintaining the Charity Hospital is placed at $100,000, then the total amount expended by the State of Louisiana in caring for, treating the sick and burying the dead of this grand total of 340,411 human beings from all countries and from all States was $4,500.000 (four millions five hundred thousand dollars). Of this amount the natives of Louisiana received about one-twentieth, or about $250,000, whilst the natives of foreign countries and of the surrounding States composing this American Union received $3,225,000.

At the same time the sole revenue which the State of Louisiana derives from foreign countries and the various States of the Union for the prevention of the introduction of foreign pestilence and the relief of the sick at the various quarantine stations, and for the protection of the commerce of the Mississippi River, is derived from the inspection fees originally levied in 1855 and 1858 by the General Assembly of the State of Louisiana for the support of quarantine.

In view of the preceding facts, illustrating at once the vast mass of human sickness and suffering which has been relieved by the State of Louisiana, so ably represented by her self-sacrificing and learned physicians, it is surely remarkable that the surrounding States should strive incessantly to injure the fair name of Louisiana, and more especially of the members of the medical profession, by reiterating the slander that the existence of pestilence in New Orleans has been repeatedly concealed for the purpose of promoting the needs of commerce; and it is still more astounding that men claiming to represent Louisiana should be active in the propagation of this slander.

Upon consultation with His Excellency, Governor Samuel D. McEnery, and with Col. I. N. Marks, the former Chairman of the Finance Committee, and Hon. Edward Booth, Chairman of the Finance Committee, and other members of the Board of Health, the suggestion of the President that able counsel should be employed for the thorough investigation of all points at issue with reference to the execution of the quarantine laws of Louisiana was fully indorsed.

The appointment, as additional counsel, of Col. Frank Zacharie, received the cordial approval of His Excellency, the Governor.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, December 20, 1881.

Col. Frank Zacharie, No. 24 Exchange Place:

Dear Sir—Enclosed please find the following documents:

1. Letter of President to His Excellency, Governor S. D. McEnery, of date December 19, 1881. Said letter relates to the subject of the resistance of quarantine fees by the New Orleans Maritime Association.
2. Communication from New Orleans Maritime Association to President of Board of Health.
3. Data furnished by S. S Herrick, Secretary of the Board of Health, relating to the state of the suits urged by Morgan and others against former Boards of Health.
4. Letter of the President of the Board of Health to Col. I. N. Marks.
5. Letter of President to Robert Oerlein, Esq.

Judge Kennedy will, without doubt, be able to furnish additional information.

It is desired that you should make a thorough investigation of this entire subject. It will be necessary to examine the court records, and to obtain accurate information at the outstep. Mr. F. A. Woolfley, Clerk of the United States Circuit Court, might give material aid.

No more important question can be considered than that of the powers of the Legislature to regulate efficiently her quarantine affairs,

Please suggest such course as you may think will best protect the interests of the State, and best cover all the points at issue.

Action should be prompt and efficient. I have directed Dr. S. S. Herrick, Secretary and Treasurer of the Board of Health, and Mr. L. O'Donnell, Attorney of the Board, to render all possible assistance.

The question of the liability of Chas. A. Whitney & Co. and of Alfred Moulton, for past quarantine fees, should be thoroughly investigated, as well as the ability of the Board to remove their former injunctions.

Respectfully, your obedient servant,

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
NEW ORLEANS, December 17, 1881.

Dr. Joseph Jones, President Board of Health:

Sir—In reply to your request concerning the injunction suits against the Board brought by certain shipping men some years since, I would offer the accompanying copies from the minutes.

I learn from C. S. Rice, Esq., former Attorney of the Board, that the following cases were entered in the United States Circuit Court in this city:

Charles Morgan vs. Board of Health, No. 7236, in 1874.
John H. Clarke et als. vs. Board of Health, No. 7241, in 1874.
C. H. Mallory et als. vs. Board of Health, No. 7268, September 11, 1874.
Fred Baker vs. Board of Health, No. 7267, September 11, 1874,

In these cases judgment was rendered *pro confesso*, no defense having been set up by the Board.

I have written to Mr. F. A. Woolfley, Clerk of this Court, to ascertain whether final judgment has been pronounced in the above, and he has promised to send an answer, but none has yet come.

Messrs. Poitevent & Favre also applied for and obtained an injunction from the Superior District Court in 1874, restraining the Board of Health from the collection of quarantine fees.

I have asked Mr. O'Donnell, our attorney, to aid in ascertaining the legal status of these suits, and hope he will soon report to you, if he has not already done so.

Respectfully, your obedient servant,

S. S. HERRICK, M. D.,
Secretary Board of Health.

EXTRACTS FROM MINUTES OF THE BOARD OF HEALTH RELATIVE TO RESISTANCE TO PAYMENT OF QUARANTINE FEES.

NEW ORLEANS, May 20, 1874.

Dr. C. B. White, President, in the chair.

The President stated that the object of the meeting was to consider the injunction brought against the Board by Charles Morgan, restraining the Board from exercising the provisions of the acts of quarantine, approved March 15, 1855, and the amendment thereto, against the steamers owned and controlled by Charles Morgan.

Upon consultation, the Board agreed to test the legality of the injunction.

Upon motion by Mr. Burwell, seconded by Mr. Heath, it was resolved that the President of the Board be advised to take such action, after consultation with the attorney of the Board, C. S. Rice, Esq., as may seem necessary to be taken in the premises.

NEW ORLEANS, August 16, 1877.

Dr. Samuel Choppin, President in the chair.

A letter was read from the Attorneys of the Board (Kennedy & Austin) in reference to the collection of quarantine fees at the Atchafalaya Station.

Col. Hardee moved that the attorneys of the board be authorized to make a test case, and to employ counsel at Morgan City.

NEW ORLEANS, September 27, 1877.

Dr. Samual Choppin, President, in the chair.

Major Austin, attorney of the board, was called upon to express his opinion relative to the decision recently rendered in the suits for collection of dues at Quarantine Stations. He urged the necessity of pushing the collection of these dues, as owners of vessels had been exceedingly lax in their settlements.

I hereby certify that the above are true copies.

S. S. HERRICK. M. D., Secretary Board of Health.

COMMITTEE ON LEGISLATION.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
STATE-HOUSE, NEW ORLEANS, December 12, 1882.

Hon. I. N. Marks, Member Board of Health, State of Louisiana:

Dear Sir—I have the honor to appoint you a member of the Committee on Legislation; said committee has not been organized at an earlier date from causes well known to yourself.

It is important that the subject-matter of the resolution of Mr. Booth should be attended to, but it is of paramount importance to the welfare of the State of Louisisiana and the existence of the entire quarantine system, that the enclosed communication from the New Orleans Maritime Association should receive immediate and thorough attention. I have already explained this matter fully to one of the leading members of this association, but the explanation availed nothing with men who are determined to resist the law, and thereby avoid payment of the just quarantine dues established by the Legislature of Louisiana, and are willing to break down every barrier against the importation of foreign pestilence, and to utterly destroy at once the health and the commercial prosperity of the State.

As former Chairman of the Finance Committee, it is well known to you that the statements of these gentlemen are entirely incorrect.

No distinction has been made in favor of any one line. Whitney & Co. (formerly Morgan & Co.) have for years resisted the collection of quarantine fees imposed by the Legislature of Louisiana, and obtained an injunction against the Board of Health for the collection of these fees. One other line has also, in like manner, resorted to the courts of justice.

No distinction has ever been made by the Board of Health, or by the Finance Committee, or by the President, during my term of service, except that which has been forced by legal proceedings by the parties before named.

The statement that the fees are illegally collected is erroneous. The Quarantine Physician collects them according to the following acts of the Legislature:

* * * * * * * * *

It is also unjust to state that the quarantine fees are heavier here than in any other port in the United States. The grounds upon which the decision was rendered against the Board of Health was, that our quarantine system instituted a tax on tonnage. In my opinion, it does not constitute a tax on tonnage, but we need legal advice on this subject. You know very well how much assistance I have received in this respect during my term of service as President of the Board.

I would respectfully suggest that the President of the Board of Health be empowered, immediately, to employ an active and learned legal adviser.

The Committee on Legislation, of which the President of the Board of Health is Chairman, should, at the earliest practicable moment, agree upon a definite line of action.

With kind regard, truly yours,

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

The opening of the great State of Texas to railroad trade and traffic, and the vast movement of grain and cattle inaugurated during the past three years, inspire all good and true citizens with renewed hopes of a brighter future, and solemnly warn the members of the General Assembly that the welfare of millions will be involved in the manner in which they may devise and execute the quarantine and sanitary laws for the exclusion of foreign pestilence from the Mississippi Valley. It is natural that men engaged in a special branch of business should be influenced by their interests and prejudices and be incapable of judging impartially and reasoning accurately about those matters which relate to the health and welfare of the people, irrespective of trades, callings and professions.

In order to demonstrate that the proposed act to fix and regulate fees at the Mississippi Quarantine Station, etc., is not prejudicial to the commerce of New Orleans, and is not subversive of the best interests of Louisiana, and does not impose heavy additional charges on commerce, we will consider these questions in their broad relations to the remarkable political changes and revolutions, and epidemic visitations, which characterized this city and State.

I—PROGRESS OF COMMERCE AND POPULATION IN LOUISIANA DURING THE FRENCH DOMINATION, 1684-1763, WHEN NO QUARANTINE EXISTED.

For nearly a quarter of a century the French colonists endured a miserable existence, and nearly perished by starvation and disease on the barren sands of Ship Island and the adjacent coast, within and arounnd Biloxi.*

A new era of prosperity and hope dawned when, in the spring of 1718, Bienville selected a site for a town on the banks of the Mississippi, and placed fifty men to clear off the ground for the location of the future capital of the province. Next spring the river overflowed its banks, the new settlement was completely inundated, and the site seemed to present an uncertain location for a city, and New Orleans remained for several years little better than a military post. In the beginning of August, 1723, Bienville removed his headquarters to New Orleans. In 1729 the white population of Louisiana, says La Harpe, amounted to about 1700 souls, and the black population to 3300.†

*A vessel from Havana, laden with provisions, brandy and tobacco, came early in January, 1709, to trade with the Colony of Louisiana. This was the first instance, ten years after the arrival of the French in Louisiana, of a vessel coming to trade with them.

In 1713, there were in Louisiana two companies of infantry, of fifty men each, and seventy-five Canadian volunteers in the King's pay. The rest of the population consisted of twenty-eight families, one-half of whom were engaged, not in agriculture, but horticulture; the heads of the others were shop and tavern-keepers, or employed in mechanical occupations. A number of individuals derived their support by ministering to the wants of the troops. There were but twenty-three negroes in the colony; adding to these, king's officer and clergy, the aggregate amount of the population was 380 persons. A few Indians and children were domesticated in the houses of the white people, and groups of the males were incessantly sauntering or encamping around them.

The collection of these individuals into one compact spot could have claimed no higher appellation than that of a hamlet; yet they were dispersed through a vast extent of country, the parts of which were separated by the sea, by lakes and wide rivers. Five forts, or large batteries, had been erected for the protection of Mobile, Biloxi, on the Mississippi, and at Ship and Dauphine Islands.

Lumber, hides and peltries constituted the objects of exportation which the colony presented to commerce. Lumber was easily obtained around the settlement of Biloxi. After the year 1709, vessels from St. Domiugo and Martinique brought sugar, coffee molasses and rum to Louisiana, and took its peltries, hides and lumber in exchange. The colonists procured some specie from the garrison of Pensacola, whom they supplied with vegetable and fowls.

Those who followed this sort of trade, by furnishing also the officers and troops, obtained flour and salt provisions from the King's stores, which were abundantly supplied from France and Vera Cruz.

Trifling, but successful essays, had shown that indigo, tobacco and cotton could be cultivated to great advantage; but hands were wanting. Experience had shown that the frequent and heavy mists and fogs were unfavorable to the culture of wheat, by causing it to rust.

† Louis the Fourteenth, in the charter which he granted Crozat, bearing date September 26, 1712, announced that the attention the King had always given to the interests and commerce of his subjects, induced him, notwithstanding the almost continued wars he was obliged to sustain, since the beginning of his reign, to seek every opportunity of increasing and extending the trade of his colonies in America; that, accordingly, he had, in 1683, given orders for exploring the territory of the northern continent, between New France and New Mexico; and Lasalle, who had been employed in this service, had succeeded so far as to leave no doubt of the facility of opening a communication between Canada and the Gulf of Mexico, through the large rivers that flow in the intermediate space, which had induced the King, immediately after the peace of Riswick, to send thither a colony and maintain a garrison. to keep up the possessions taken in 1683, of the territory on the Gulf, between Carolina on the east, and Old and New Mexico on the weat. But, war, having broke out soon after in Europe, he had not been able to draw from this colony the advantages he had anticipated, because the merchants of the kingdom, engaged in maritime commerce, had relations and concerns in the other French colonies, which they could not relinquish.

The King declared that, on the report made to him of the situation of the territory now known as the province of Louisiana, he had determined to establish there a commerce which will be very beneficial to France, it being now necessary to seek in foreign countries many articles of commerce, which may be obtained there. for merchandise of the growth or manufacture of the kingdom.

The King of France accordingly granted to Crozat the exclusive commerce of all the territory possessed by the Crown between Old and New Mexico and Carolina, and all the settlements, ports, roads and rivers therein—principally the port and road of Dauphine Island, before called Massacre Island; the river St. Louis, previously called the Mississippi, from the sea to the Illinois; the river St. Philip, before called Missouri; the river St. Jerome, before called the Wabash, with all the land, lakes and rivers mediately or immediately flowing into any part of the river St. Louis or Mississippi.

The territory, thus described, is to be and remain included, under the style of the government of Louisiana, and to be a dependence of the government of New France, to which it is to be subordinate. The King's territory, beyond the Illinois, is to be and continue a part of the government of New France, to which it is annexed; and he reserves to himself the faculty of enlarging that of Louisiana.

The right is given to the grantee to export from France into Louisiana all kinds of goods, wares and merchandise during fifteen years, and to carry on there such a commerce as he may think fit. All persons natural or corporate, are inhibited from trading there, under pain of the confiscation of their goods, wares, merchandise and vessels; and the officers of the King are commanded to assist the grantee, his agents and factors in seizing them.

The faculty is allowed him to send annually a vessel to Guinea, for negroes, whom he may sell in Louisiana, to the exclusion of all others.

The French had been unfortunate in the selection of the places they had occupied. The sandy coast of Biloxi is as sterile as the desert of Arabia. The stunted shrubs of Ship and Dauphine Islands announced the poverty of the soil by which they are nurtured.

Shortly after the settlement of Louisiana, Iberville, finding from Bienville's report that the English meditated an establishment on the Mississippi, determined on effecting one immediately. He departed for that purpose in the smallest vessel, with fifty Canadians, on the 17th of January, 1700, having sent Bienville, by the lakes, to the Bayagoulas, to procure guides to some spot in the lower part of the river secure from the inundation. They led him to an elevated one, at the distance of fifty-four miles from the sea, where Iberville met them soon after, and the building of a fort was immediately begun. In this contracted spot, on which Sauvolle had located his brother on the Mississippi, the few soldiers under him, insulated during part of the year, had the mighty stream to combat.

The buzz and sting of the mosquitoes, the hissing of the snakes, the croaking of the frogs and the cries of the alligators, incessantly asserted that the lease the God of Nature had given these reptiles of this part of the country had still a few centuries to run.

The settlement near the fort at Mobile suffered much in the spring of 1711 from the overflowing of the river; and, in consequence of which, at the recommendation of d'Artaguette, the spot was abandoned, and a new fort was built higher up, which, till a late day, stood immediately below the present city of Mobile.

In the barrens around this new fort of Mobile, the continual *sugh* of the needle-leaved tree seemed to warn d'Artaguette that his people must recede fruther from the sea before they came to good land.

Whilst it is true, during the first thirteen years war had in some measure checked the prosperity of the Colony of Louisiana, although during this period, with the exception of the descent of the crew of a privateer from Jamaica, no act of hostility was committed by an enemy within the colony; but the incessant eruptions on the land of the Indians, under the protection of Louisiana, by those in alliance with Carolina, prevented the extension of the commerce and settlement of the French toward the north. Yet all these difficulties would have been promptly overcome, if agriculture had been attended to. The coast of the sea abounded with shell and other fish; the lagoons near Mobile River were crowded with water fowls; the forest teemed with deer, the prairies with buffaloes, and the air with wild turkeys. By cutting down the lofty pine trees around the fort, the colonists would have uncovered a soil abundantly producing corn and peas. By abandoning the forts on the Mississippi, Ship and Dauphine Islands, and at the Biloxi, the necessary military duties would have left a considerable number of individuals to the labors of tillage; especially if prudence had spared frequent divisions of them to travel for thousands of miles in quest of ochres and minerals, or in the discovery of distant land, while that which was occupied was suffered to remain unproductive, *Martin, vol. 1, p. 177.*

The charter of the Western Company was registered in the Parliament of Paris, on the seventh of September, 1717; the exclusive commerce of Louisiana was granted to it, for twenty-five years, and all the King's subjects as well as corporate bodies and aliens, were allowed to take shares in it. All the other subjects of the King of France were prohibited from trading to Louisiana, under the penalty of the confiscation of their merchandise and vessels, but this was not intended to prevent the inhabitants from trading among themselves or with the Indians. The lands, coasts, harbors and islands in Louisiana were granted to the Western Company, as they had been to Crozat; it was authorized to make treaties with the Indians and to declare and prosecute war against them in case of insult; and the property of all Mexico was granted to it without payment of any duty whatever.

The faculty was given to it to grant lands, erect forts, levy troops, and recruits even in France; it was authorized to nominate the governor and the officers commanding the troops; and power was given to fit out ships of war and cast cannon, and to appoint and remove judges and officers of justice.

French vessels and crews alone were employed by the Western Company; and the King transferred to it all the forts, magazines, guns, ammunition, vessels, boats, provisions, in Louisiana, with all merchandise surrendered by Crozat. The company engaged to bring in, during its privilege, six thousand white persons and three thousand negroes.

The Western Company, to whom the exclusive commerce or Louisiana had been granted for twenty-five years, from the first of January, 1717, until the last of the year 1742, after lasting about fourteen years, finding themselves disappointed in the hopes they had entertained of the profits of their commerce, and the advantages they had imagined would result from the charter; alarmed at the great loss they had sustained at the Natchez, and the great expense necessary to be incurred in the protection and defense or the province, solicited, on the twenty-second of January, 1732, the King's leave to surrender the country and their charter. By an arrest of the council of the following day, and letters patent, which issued therein, on the tenth of April, the retrocession made by the company of the property, lordship and jurisdiction of the province of Louisiana and its dependencies, together with the country of the Illinois, and the exclusive commerce to these places was accepted. The arrest declares the commerce of the retroceded countries free for the future to all the King's subjects.

When the Western Company received its charter, the settlements in the wide, extended country ceded to it were confined to a very narrow space at the Biloxi, Mobile River, Ship and Dauphine Islands. Two very small fortifications had been erected on the Mississippi—the one near the sea, the other at the Natchez, and one at Natchitoches

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Commerce was Crozat's principal object, and he contemplated carrying it on chiefly with the Spaniard. His plan was to have large warehouses on Dauphine Island, and to keep small vessels plying with goods to Pensacola, Tampico, Tuespe, Campeachy and Vera Cruz. His designs, however, were frustrated, the Spaniards, after the peace, refusing admittance to French vessels in those ports, on the solicitation of the British, to whom the King had granted privilege by the treaty of the Assiento.

Red River. Agriculture had hardly reared its head, though rice was sowed in the swamps. Horticulture supplied the tables of a few with vegetables, and enabled some of the rest to procure a little money by supplying the Spaniards at Pensacola.

When the Western Company resigned its charter, all the original settlements had considerably extended their limits, and a new one had been formed at the Alibamons.

New Orleans was founded. Although there was no plantation below it a considerable one, with a gang of upwards of one hundred slaves, had been formed opposite the city, and there were many smaller, but still considerable ones, at Tchoupitoulas and Cannes Brulées. A vast number of handsome cottages lined both sides of the river at the German coast; grantees of wide tracts had transported a white population, and sent negroes to Manchac, Baton Rouge and Pointe Coupée, and a settlement had arisen at Natchez, the rival of New Orleans; small colonies had gone to the Yazous and Arkansas, while others had descended from Canada to the Wabash and Illinois.

The culture of indigo and tobacco had been added to that of rice.

The forests yielded timber for various uses and exportation. Wheat and flour came down from the Illinois. Trade was carried on with the Indians at Natchitoches, Mobile, Alibamons and the Cadadoquois, far beyond the western most limits of the present State. Provision had been made for the regular administration of justice; churches and chapels had been built at convenient distances, and without, perhaps, any exception, every settlement had its clergyman, under the superintendence of a vicar-general of the Bishop of Quebec, of whose diocese Louisiana made a part. A convent had been built, the nuns of which attended to the relief of the sick of the garrison, and to the education of the young persons of their sex.

The monopoly which the company and Crozat had enjoyed and strictly enforced, had checked, and it may be said, destroyed the incipient trade the colony had before the peace of Utrecht; but the produce of the tilled land and the forest, the hides, skins, furs and peltries, which were obtained from the Indians for goods which were easily procured in the company warehouses at the Biloxi, New Orleans, the Natchez and the Illinois, and which were disposed of at an enormous advance, enabled the company to dispose of considerable quantities of merchandise.

The white population was raised from seven hundred to upwards of five thousand, and the black from twenty to two thousand.

The Crown, through Salmon, the King's Commissioner, received possession of Louisiana, and purchased all the property of the Western Company in the province, the appraised inventory of which amounted to two hundred and sixty-three thousand livres, not equal in value to sixty thousand dollars. The property of the Western Company consisted of some goods in the warehouses, a plantation opposite the city, which was partly improved as a brickyard, in which were two hundred and sixty negroes, fourteen horses and eighty thousand barrels of rice.

The negroes were valued at an average of seven hundred livres, or one hundred and sixty-three dollars and a third; the horses at fifty-seven livres, or twelve and a half dollars, and the rice three livres, or sixty cents and a third the hundred weight. At these prices nineteen hundred weight of rice were given for a horse; at the present value of rice (four cents a pound), the animal was worth seventy-six dollars, and the negro nearly one thousand dollars.

The commerce of Louisiana, released from the restraint of the exclusive privilege of the company, now began to thrive.

Indigo was cultivated to a considerable extent, and with much success, and with rice and tobacco, afforded easy means of remittance to Europe, while lumber found a market in the West India Islands. Important additions were made to the inhabitants by immigrants, and more especially by the unfortunate Acadians.

We have no precise data as to the actual population of the Province of Louisiana at the time of the cession of Louisiana to Spain, on the thirty-first of November, 1763; but according to a census of the inhabitants of the province, which was taken by direction of the first Spanish Governor, Don Antonio de Ulloa, it appears that there were one thousand eight hundred and ninety-three men fit to bear arms; one thousand forty-four marriageable women; one thousand three hundred and seventy-five boys, and one thousand two hundred and forty-four girls; in all, five thousand five hundred and fifty-six white individuals. The blacks were nearly as numerous.

If the history of Louisiana be viewed in connection with its commercial and agricultural development, during the French rule, extending from the settlement on Matagorda Bay by La Salle, in 1684, to the treaty of Paris, in 1763, when France ceded to Spain and England her possessions in North America, during which entire period not a single quarantine restriction was imposed on commerce, we arrive at the following conclusions:

(*a*). Under the French Government the growth of the population of Louisiana was very slow. According to a census of the inhabitants of the province, three years after the treaty of Paris, it had 1893 men fit to carry arms, 1044 marriageable women, 1375 boys, 1244 girls—in all 5556 whites. The blacks were nearly as numerous. The entire population of the province at the end of eighty years did not exceed 12,000.

The growth of New Orleans had been very slow, and in fifty-one years after its foundation the population amounted to only 3190 persons, of all colors, sexes and ages; and of this number 1265 were slaves. The number of houses was only 468, and the greatest part of them were in the third and fourth streets from the river. The commerce of New Orleans, and the province generally was exceedingly limited during the French domination.

Thus the exports of the province, during the last year of its subjection to France, was as follows:

Indigo	$100,000
Deer Skins	80,000
Lumber	50,000
Naval Stores	12,000
Rice, Peas and Beans	4,000
Tallow	4,000
	$250,000
An interlope trade with the Spanish Colonies took away goods worth	60,000
The Colonial Treasury gave bills on Government in France for	300,000
The province afforded means of remittance for	$670,000

Few merchant vessels came from France, but the Island of Hispaniola carried on a trade with New Orleans, and some vessels came from Martinico. King's vessels brought whatever was necessary for the troops and goods for the Indian trade. The indigo of Louisiana was greatly inferior to that of Hispaniola, the planters being quite unskillful and inattentive in the manufacture; that of sugar had been abandoned, but some planters near New Orleans raised a few canes for the market.

The navigation of the Mississippi from the Gulf to New Orleans was very tedious before the introduction of steam, and often occupied one month. The commerce of the city was very limited during the French rule.

It is probable that La Salle and his men suffered with yellow fever in the West Indies as early as 1684, and they appear to have brought the yellow fever with them to the shores of the Gulf of Mexico. The next visitations of yellow fever were at Biloxi in 1701 and 1704. Iberville and 809 of his men died of yellow fever in the West Indies in 1706. The historian, Le Page du Pratz, states that six weeks before his arrival at Cap. Francois, St. Domingo, in 1718, 1500 persons died of a distemper called the Siam disease which was one of the French names for yellow fever.

It is probable that yellow fever caused the great mortality among the troops and convicts in 1718 on board the French ship, which had lost its reckoning and missed its destination, and passed to the west of the mouth of the Mississippi.

As early as 1726, eight years after the foundation of New Orleans, the severe fevers of the summer and autumn attracted the attention of the government. The force which Bienville assembled in 1736 for the subjugation of the Chickasaws consisted of upwards of 1200 whites and double that number of Indians and black troops. This comparatively large army unaccountably spent six months in making preparations for its march. In the meantime, the troops lately out from France became unhealthy, many died, and the climate had an almost equally deleterious effect on those from Canada. In the Chickasaw war peace was purchased at the price of many valuable lives, estimated at 500, out of 1200 white troops not slain in battle, but destroyed by fevers of the climate.

Experience having shown that European troops could not stand the labors in the field, but sickened and died under the burning sun of Louisiana and the chilling fogs of night, the Western Company was, therefore, compelled to introduce African negroes to cultivate the plantations scattered along the bayous and rivers of the delta of the Mississippi, and for several years it furnished the agricultural interests of the colony with several hundred annually—which was the origin of slavery in Louisiana.

We have failed to discover in the writings of La Harpe, Du Pratz, Charlevois, Martin, Gayarre and others, any facts sustaining the views advanced by some, that yellow fever was first imported into Louisiana during the French domination by the slave ships. The mortality on these ships was frightful, and was chiefly occasioned by bad diet, starvation, crowding, foul air, scurvy, diarrhea and dysentery.

NEW ORLEANS, February 26, 1884.

Dr. Joseph Jones, corner of Camp and Washington, city:

My Dear Sir—In a relation of the voyage of the Ursulines from Rouen to New Orleans, published in 187 by Gabriel Gravier, a member of the Historical Societies of France and Normandy, and Secretary of t "Society of the *Bibliophiles de Rouen*," I have seen for the first time that Lawvolle died of yellow fever, 1701. at the fort of Biloxi, I doubt the correctness of the statement, for in the numerous French doc ments which I have examined nothing of the kind is mentioned. I take it for granted that the author sides in Rouen. He might be written to with a view of ascertaining on what authority his statement based. For greater security, the letter to him might be addressed care of the publishers, Messrs. Maiso neuve & Co., Paris, Quai Voltaire, No. 15.

Yours faithfully, CHARLES GAYARRÈ.

Hospital Street, No. 121, Near Dauphine.

II—PROGRESS OF COMMERCE AND POPULATION AND OUTLINE OF EPIDEMIC VISITATIONS IN LOUISIANA DURING THE SPANISH DOMINATION 1763-1802, IN WHICH PERIOD THE PROVINCE WAS WITHOUT QUARANTINE RESTRICTIONS AND LAWS.

New Orleans during both French and Spanish rule, was without quarantine regulations and an organized board of health.

That the commercial relations of New Orleans were considerably extended under the Spanish rule, is evident from the fact that in 1802, 258 vessels with a tonnage of 23,725 tons, entered the Mississippi; and during the same year, there sailed from the Mississippi 265 vessels with a tonnage of 31,241 tons.

The rapid increase of the population of New Orleans under the Spanish rule, and the great influx of strangers from the United States, from Spain, from Arcadia and the Canary Islands, formed a most important condition for the spread of yellow fever when once introduced.

In 1769, the total population of Louisiana amounted to 13,538, and that of New Orleans to 3190, while in 1803, total population of the province 49,473, and of New Orleans 8056; during the short period of thirty-four years the population had increased tenfold.

The fall of 1765 was very sickly in New Orleans as well as that of 1766, when the population of the city was reduced by an epidemic which is said to have closely resembled yellow fever. Yellow fever prevailed in Mobile in 1765, and according to Bernard Romans, was brought there by a regiment from Jamaica. The author, when describing the disease of the Floridas, says: "I am persuaded that where the yellow fever has made its appearance in the Floridas, it was imported from Jamaica or Havana, as was the case in 1765." Romans says that "the first visitation of yellow fever was in 1769. Since that time it has continued to be an almost annual scourge. It was introduced into this continent in the above year by a British vessel from the coast of Africa with a cargo of slaves.

Dr. Thomas fixes the first visitation of yellow fever in New Orleans in 1796, or about twenty years later. The army of 1400 men assembled by Galvez for an expedition against the English suffered considerable loss from the fevers incident to the climate.

Dr. Daniel Drake, who visited New Orleans and instituted personal inquiries, states that the first invasion of yellow fever of which we have an authentic account was in the year 1791. Dr. Drake's informant, Richard Relf, Esq., was one of the most venerable citizens of New Orleans.

On the ninth of May, 1794, Don Francisco Louis Hector, Baron de Carondelet, commenced the excavation of what is now known as the Old Canal Basin for the purpose of draining the stagnant water of the city and environs into the Bayou St. John, which he regarded as the cause of the epidemics which were so fatal to the prosperity of New Orleans. The great sanitary problem of New Orleans—drainage—engaged the attention of its governors for seventy-four years before the practical and valuable experiment of Baron Carondelet.

New Orleans was severely afflicted with yellow fever in the fall of 1796.

In 1787 the population of New Orleans was 5384, with a total mortality of 338, one death in 15.04 inhabitants, a ratio per 1,000 inhabitants of 63.92.

In 1796 the population of New Orleans was 8756, with a total mortality of 638, one death in 13 57 inhabitants, and 72.86 per 1000.

In 1787, when there was no record of an epidemic in New Orleans, the mortality reached the proportion of one in fifteen of the inhabitants, and in 1796 this heavy mortality was still further increased by the yellow fever, to one death in 13.7 inhabitants. The mortality of both these years, 1687 and 1796, was in relation to the actual population, far heavier than that of the year 1878, which is memorable for its epidemic of yellow fever, and which stands as third in the list of great epidemics in New Orleans, from its foundation in 1718 to the present time. The total mortality for 1878 was 10,318, or one death to twenty inhabitants, or 50.17 per 1000.

There are authentic works to show that yellow fever prevailed, or was present in New Orleans in 1794, 1795, 1796, 1797, 1798, 1799, 1801, 1802, 1803. In the light of such facts, it is but just to hold the view that New Orleans has been subject to pestilential fevers at various times since its foundation, and that the opinions as to its wonderful healthfulness from its foundation to 1796 are without foundation in fact.

It is the yellow fever, more especially during the latter portion of the Spanish rule, during which period the commercial relations with the United States extended, attacked chiefly Americans; and as yellow fever ravaged during this period Philadelphia and New York, the contagionists of New Orleans accused the Americans of introducing the disease.

The foreign importation of yellow fever during the Spanish domination was referred to increased commercial relations.

No quarantine restrictions were imposed upon the commerce of New Orleans during the Spanish and French dominions; under the former the progress of the colony was slow; under the latter the increase of commerce and population was more marked. Therefore, during the first century of the existence of the colony of Louisiana, quarantine did not enter as an element for the exclusion of foreign pestilence, or for the advancement or destruction of commerce.

III—PROGRESS OF COMMERCE AND POPULATION, AND OUTLINE OF EPIDEMIC VISITATIONS IN LOUISIANA DURING THE AMERICAN DOMINATION 1803-1882, IN WHICH QUARANTINE HAS BEEN ESTABLISHED AND MAINTAINED AT VARIOUS PERIODS.

On the twentieth of December, 1803, the United States Commissioners and force entered New Orleans and took possession of Louisiana, in accordance with the treat between Napoleon Bonaparte and the government of the United States.

In 1801 the yellow fever had, in the autumn, been very fatal in New Orleans, and connection with other remarks on the subject, Governor Claiborne, in a message to th Legislative Council, on the seventeenth of December, 1804, called attention of that bod to a plan devised by President Thomas Jefferson, to prevent the recurrence of such calamity. Jefferson expressed the opinion that in building cities in the United State the people should take the checker board for their plan, leaving the white squares ope and unbuilt forever and planted with trees.* Unfortunately the plan of Jefferson d not meet with favor in the gradual enlargement of New Orleans.

Louisiana was purchased by the United States from France by treaty, April 30, 180 for about $15,000,000. In 1811, it was admitted into the Union; and this year is al memorable for the building of the first steamboat at Pittsburg. At that time, t quantity of land within the State, adapted to the cultivation of the three staples, was timated as follows: Sugar, 250,000 acres; rice, 250,000; cotton, 2,400,000. The wh amount of sugar made in Louisiana in 1810, was about 10,000,000 pounds; in 1814, i less than 15,000,000; and in 1817, 20,000,000, or nearly one-third of the whole amou consumed in the United States.

Previous to the closing of Bayou Manchac by General Andrew Jackson, New Orlea was really situated on an island—*the Island of Orleans*—formed by the River Mississi on one side, and the Lakes Pontchartrain and Maurepas, together with an outlet of Mississippi, called Iberville, on the other about 160 miles long, and from three to fi miles broad. The Island of Orleans produced sugar cane, maize, rice, indigo, cotton a tobacco, the peach, orange, three or four species of the fig, the banana, and most cul ary vegetables.

The circumstance, however, that rendered the political and moral picture of Louisia peculiarly distinctive was that almost the total of the production of the industry of inhabitants flowed to one common centre. And it was boldly predicted, after the co try fell into the possession of the United States, that: "New Orleans alone will be ever, as it is now, the mighty mart of the merchandise and produce brought from m than a thousand rivers. Unless prevented by some great accident in human affairs, rapidly increasing city will, in no distant time, leave the emporia of the Eastern wo

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* Referring to the probable growth of New Orleans, the President said:

"The position of New Orleans certainly destines it to be the greatest city the world has ever seen. T is no spot on the globe to which the produce of so great an extent of fertile country must necessarily c It is three times greater than that on the eastern side of the Alleghanies, which is to be divided among the seaport towns of the Atlantic States. There is also no spot where yellow fever is so much to be a hended. In the middle and northern parts of Europe, where the sun rarely shines, they may safely cities in solid blocks, without generating disease; but under the cloudless skies of America, where the so constant an accumulation of heat, men cannot be piled one on another with impunity. Accordingl find this disease confined to the solid built parts of our towns, and the part on the water side, where th the most matter for putrefaction, but rarely extending into the thin built parts of the towns, and never the country. In these latter places, it cannot be communicated. In order to catch it, you must go int local atmosphere, where it prevails. Is not this then a strong indication that we ought not to contend the law of nature, but should decide at once that all our cities should be thinly built?"

After these introductory observations, the President expressed the opinion that in building cities, i United States, the people should take the checker-board for their plan, leaving the white squares oper unbuilt forever, and planted with trees. "As it is probable," he observed to Claiborne, 'that New Or must soon be enlarged, I enclose this same plan for consideration. I have great confidence that hov the yellow fever may prevail in the old part of the town, it would not be communicated to that part v should be built on this plan, because this would be like the thin built parts of our towns, where exper has taught that a person may carry it after catching it in its local region, but can never communicate of that. Having very sincerely at heart that the prosperity of New Orleans should be uncheckere great faith founded, I think, on experience, in the effect of this mode of building against a disorder is such a scourge to our close-built cities, I could not deny myself the communication of the plan, leav to you to bring into real existence, if those more interested should think as favorably of it as I do. beauty, pleasure and commerce, it would certainly be eminent."—*Executive Journal, vol.* 1, *p.* 57. *H of Louisiana, The American Domination: Charles Gayarre*, 1866: *pp.* 36-37.

far behind. With Boston, New York, Philadelphia and Baltimore on the left, Mexico on the right, Havana in front, and the immense Valley of the Mississippi in the rear, no such position for the accumulation and perpetuity of wealth and power ever existed."

Nearly three-quarters of a century ago Mr. Darby said: "By repeated admeasurement upon the best constructed maps the Mississippi River and its tributary streams drain more than 1,400,000 square miles. If this expanse was peopled only equal to Connecticut, in 1810, or about sixty persons to each square mile, the aggregate would be 84,000,000. It cannot be rashness to assert, if the present order of things continues to operate, that, at a period not more than two centuries distant, more than 100,000,000 of human beings will send the surplus fruits of their labor to New Orleans.*

On the twentieth of December, 1803, the United States commissioners and forces entered New Orleans and took possession of Louisiana, in accordance with the treaty between Napoleon Bonaparte and the government of the United States.

In 1803, New Orleans had a military hospital and a charity hospital, with a few houses, yielding to it a revenue of about $1500 a year. †

In 1802, two hundred and sixty-eight vessels (170 American, 97 Spanish and 1 French) of all kinds, with a tonnage of 23,725 tons, entered the Mississippi, eighteen of which were public armed vessels.

In the same year. there sailed from the Mississippi 265 vessels (158 American, 104 Spanish, 5 French) with a tonnage of 31,241 registered tons.

All the land on both sides of the Mississippi, from fifty miles below the city to Baton Rouge, had been granted to the depth of forty arpents, or one mile and a half, which is the depth of all original grants. Some had double and others treble grants, that is to say, a depth of eighty or one hundred arpents. A few grants extended as far as the sea, or a lake behind them. In other parts of the country the people, being generally settled on the banks of a river or creek, had a front of from six to forty arpents, and the grant generally expressed a depth of forty arpents.

No authentic census of the inhabitants of the province since that of 1788 is extant, but one made for the Department of State, by the Consul of the United States at New Orleans, from the best documents he could procure in 1803, presents the following results:

In the city of New Orleans, 8056; from the Balize to the city, 2388; at Terre-aux-Bœufs, 661; Bayou St. John and Gentilly, 488; Barataria, 101; Tchoupitoulas, 7444; parish of St. Charles, 2421; St. John the Baptist, 1950; St. James, 2200, Lafourche, 3098; Valenzuela, 1057; Iberville, 1300; Galvez (town), 247; Baton Rouge, 1513; Pointe Coupée. 2150; Attakapas, 1447; Opelousas, 2470; Washita, 361; Avoyelles, 432; Rapides, 753; Natchitoches, 1631; Arkansas, 368; Illinois and St. Louis, etc., 6028; Mobile, 810; Pensacola, 404; grand total, 49,473.

The annual produce of the province was supposed to consist of 3000 pounds of indigo, rapidly declining; 20,000 bales of cotton, of 300 pounds each; 5000 hogsheads of sugar, of 1000 pounds each, 5000 casks of molasses, of 50 gallons each.

There were but few domestic manufactures. The Acadians wrought some cotton into quilts and homespun, and in the more remote parts of the province, the poorer kind of people spun and wove wool mixed with cotton into coarse cloth.

There was a machine for spinning cotton in the parish of Iberville, and another in Opelousas, but neither was much employed. In New Orleans, there was a considerable manufacture of cordage, and a few small ones of hair powder, vermicelli and shot. There were near the city about a dozen distilleries, in which about four thousand casks of taffa, of fifty gallons each, were made, and a sugar refinery, which produced about 200,000 pounds of loaf sugar.

1805—In July, 1805, after James Pitot had resigned his commission as Mayor, and Watkins had been appointed in his place, the new City Council went actively to work and to plan improvements. It passed resolutions requesting the evacuation of the forts around the city, which were occupied by the troops of the United States, their speedy destruction, and the filling up of the ditches, which surrounded the forts of New Orleans. Claiborne partially complied with their request. In a communication of the

*New Orleans is distant, by water, from the English Turn, 13 miles; Fort St. Philip, 70; Balize 102; the bar and sea, 105; Fort St. John, 5; Fort Petites Coquilles, 19; Mobile and Blakely, 164; Madisonville, over the Lake, 57; Natchez, 310; Bayou Sara, 160; Opelousas Church, 220; Natchitoches, 417; Hot Springs of Ouachita, 645; Alexandria, 344, Mouth of the Ohio, 1050, Falls of Ohio, 1490, Pittsburg, about 1900; St. Louis, 180; and the mouth of the Columbia River by St. Louis, 4700. *By Land*—Natchez, by Madisonville, 156; and by way of Baton Rouge, 224; Fort Stephens, 252; Fort Stoddard, 212; Nashville, by Madisonville, 480; Opelousas Church, 242; Philadelphia, by Knoxville, 1500; New York, by Knoxville, 1600; Natchitoches, 256; Nacogdoches, 437; St. Antonio, 744; City of Mexico, 1549; and Washington City, 1233 miles.

† In 1804, the city of New Orleans was made a port of entry and delivery, and the Bayou St. John a port of delivery.

The first act of incorporation was granted to the city of New Orleans by the Legislative Council of the Territory in 1805, under the style of the Mayor, Aldermen and inhabitants of the city of New Orleans. The officers are Mayor, a Recorder, fourteen Aldermen and one Treasurer. This year a branch of the United States Bank was established in New Orleans.

second of August, he said to them: "I am strongly impressed with the opinion that the stagnant water which accumulates in the old fortifications must prove injurious to the health of the city; that I cheerfully consent to the levelling of all of them, except those of Forts St. Charles and St. Louis. These two forts are garrisoned by troops of the United States, and cannot be evacuated but in pursuance of orders emanating from the President. Desirous, however, of co-operating with the City Council in all measures which may conduce to the health of the city, I have no objection to the draining of the ditches in the vicinity of St. Charles and St. Louis, under an impression that it can be done without injury to the works."

1806—The population of Louisiana was 52,998; slaves, 23,544; free people of color, 3355; whites, 26,069; of these, at least 13,500 were natives of Louisiana, for the most part descendants of the French; about 3500 natives of the United States, and the residue Europeans. In the beginning of July, Claiborne departed from New Orleans, partly to avoid a residence in the city during the sickly season.

GENERAL CENSUS OF THE TERRITORY OF ORLEANS FOR 1806.

County.	White Males Over 21.	White Males Under 21.	Females of all Ages.	Col'd Males, Females and Children Free	Slaves.	Total.
Orleans	2,108	1,422	2,781	2,312	8,378	17,00
German Coast	555	647	972	229	3,285	5,68
Acadia	607	822	1,332	53	2,248	5,06
Iberville	362	461	731	71	965	2,59
Lafourche	586	977	1,335	25	610	3,53
Point Coupée	267	258	443	115	2,251	3,33
Attakapas	720	877	1,333	166	1,826	4,92
Opelousas	584	771	1,104	239	1,091	3,78
Rapides	488	513	746	15	716	2,4
Natchitoches	407	270	410	121	1,209	2,4
Ouachita	200	143	256	4	122	7
Concordia	163	182	236	5	873	1,4
Total	7,047	7,343	11,679	3,355	23,574	52,9

ARRIVALS AND DEPARTURES OF VESSELS IN THE PORT OF NEW ORLEANS.

	Mar. 1807	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan. 1808	Feb.	Mar.	Tot
Arrivals, ships...	16	34	30	20	34	38	8	11	20	35	37	22	9	31
Departures, ships	20	49	44	27	26	19	10	11	14	20	51	11	8	35
Arrivals, ships...	96	106	173	44	4	2	0	0	0	5	0	0	0	34
Departures barges and keel-boats .	1	8	2	0	0	0	0	0	0	0	0	0	0	1

N, B.—According to this tableau, 316 vessels have cleared loaded with products of Louisiana or of ported goods. Vera Cruz and Havana had a certain number. Florida and Attakapas also.

TABLE OF BIRTHS, DEATHS AND MARRIAGES IN THE CITY OF NEW ORLEA from March, 1808, to March, 1809. Population October 30, 1808, 15,000.

1808.		Births.		Deaths.				Marria	
				Adults.		Infants.			
		W.	C.	W.	C.	W.	C.	W.	
April	Catholic	23	80	2	16	4	4	1	
	Protestant			6	1	1			
May	Catholic	24	92	16	28	2	12	5	
	Protestant			4					
June	Catholic	9	26	4	9	6	12	3	
	Protestant			5					
July	Catholic	25	61	9	19	5	9	2	
	Protestant			6					
Aug.	Catholic	24	57	8	22	7	9	2	
	Protestant			6					
Sept.	Catholic	19	47	9	14	3	13	3	
	Protestant			12					
Oct.	Catholic	26	51	14	11	4	11	5	
	Protestant			16					
Nov.	Catholic	24	54	16	16	3	3		
	Protestant			13					
Dec.	Catholic	15	22	9	11	2	3		
	Protestant			8	3	1			
Feb.	Catholic	11	15	6	12	1	6		
	Protestant			12	1				
Mar.	Catholic	6	16	12	14	2	5		
	Protestant								
Total		137	319	318	286	56	109	6	

FROM LAFON'S ANNUAIRE LOUISIANAIS OF 1809.

DOCTORS AND SURGEONS OF NEW ORLEANS.

J. B. Conrotte	27 St. Louis street.	Keene	70 St. Louis street.
Conand	27 St. Louis street.	Y. Labie	10 North Bourbon street.
R. Dow	10 Conde street.	G. Montegut	6 North Royal street.
Deveze	16 Dumaine street.	J. Mitchel	58 St. Louis street.
W. Flood	12 Customhouse street.	N. Robelet	44 Dumaine street.
L. Fortin	15 South Royal street.	Raoul	4 South Levee street.
D. Fleitas	32 North Bourbon street.	O. Spencer	8 Bienville street.
Henderson	17 Bienville street.	St. Nudard	On the Suburbs.
C. Gros	23 Toulouse street.	J. Watkins	Bayou St. John.

APOTHECARIES.

Anfoux	19 South Royal street.	Leonard	5 Chartres street.
Blanquet	22 Bienville street.	Ferbin	41 Chartres street.
Duffiloil	12 Toulouse street.		

DENTISTS.

Gardeth	17 North Royal street.	Roger	36 Dumaine street.

1808.—In the month of March, the City Council requested the Governor to consent to the demolishing of Fort St. Louis and the filling up of the trenches surrounding it, "inasmuch as it impeded the communication between the town and the suburb St. Mary, and the trenches were receptacles of stagnant water and all manner of filth which engender disease—and the further request was that the material of said fort be left at the disposal of the Council of the city." Claiborne consented to the first part of the request, but ordered that the material of the demolished fort be left at the disposal of the military agent of the United States who would employ them elsewhere for public levees.—*Executive Journal, p.* 181, *vol.* 3; *History of Louisiana, Am. Dom., Gayarre, p.* 194.

Between the nineteenth of May, and the thirteenth of July, 1809, thirty-four vessels arrived from the Island of Cuba, with 5797 individuals, of whom 1828 were white, 1978 free blacks or colored persons, and 1991 slaves. These people had sought a refuge in that island on the insurrection of the blacks in Hispaniola.

On the second of November, 1808, the Secretary of War directed General Wilkinson to take measures, without delay, for assembling at New Orleans and its vicinity, a large portion of the regular troops, as circumstances would allow. General Wilkinson reached New Orleans on the nineteenth of April, 1809. The force which he found in the city was a little less than 2000 men, and one-third of it was on the sick list.

HOPITAL DE CHARITÉ.

L'ancien hôpital de charité fondé par les Français, fut entierement detruit par l'ouragan de 1779, Don Andres Almonaster y Roxas, Colonel des Milices de cette ville. Alfarés Royal, Regidor perpétual et chevalier de Saint Charles, fonda celui qui existe aujourd'hui, en l'année 1786. Il le construisit entier à ses frais et dépends, le meubla de tous les utensiles nécessaires au service et soulagement des malades, et lui legna cinq esclaves à talent, en assignant pour les rents les boutiques au riz de chausée de l'encognure rue St. Pierre et de la Levée; Il fit aussi reparer à ses depends cinq petites maisons, propriété de l'ancien hôpital.

Il en fut nommé patron, et a son décès ses enfants légitimes, et à defaut d'eux, les enfants de ses deux sœurs, ou en cas de maladie le colonel de milices.

La dotation est pour vingt-quatre lits destinés des maladies qui ne soient ni incurable ni lépreux, mais pauvres et reconnus pour tels. Si quelques autres maladies, n'étant point rangés dans la classe des pauvres, veulent s'y faire traiter, ils sont tenus à payer une redevance particulière, pour ne pas se faire prejudicier aux founds detaux. Cet fondation fut déclarée par le monarque sous sa protection royalle immediate, suivant l'institution et la volonté du fondateur, avec les privilèges et les droits attachés au patronfat.

MICHAEL ANTONIETTE LEONARDE ADMONASTER, Patron.
DON ANDRE FERNANDEZ, Majord.
JUAN XIMENS, Admis.
BLANQUET, Medecin.

—*Annuaire Louisianais pour l'Annee* 1809, *par B. Lafon, Ingenierie Geographe a la Nouvelle Orleans de l'Imprimerie de l'Auteur.*

He spent some time in reconnoitering the country around, in search of a spot, from which the troops might readily be brought into action, in case of an attack, and in which they might, in the meanwhile, enjoy as much health as the climate would allow. His choice fell on an elevated piece of ground on the left bank of the Mississippi, about eight miles below the city, near the point at which the road leading to the settlement of Terre-aux-Bœufs leaves that which runs along the river. The troops had hardly been three weeks encamped at Terre-aux-Bœufs when the most peremptory order from the Department of War, of the twenty-fourth of August, was received by General Wilkinson, directing him to embark his whole force, leaving only sufficient garrisons of old troops at New Orleans and Fort St. Philip, and to proceed to the high grounds in the rear of Fort Adams and Natchez. A difficulty in procuring boats, and other circumstances did not allow the troops to begin ascending the river, before the fifteenth of September;

their progress lasted forty-seven days, during which time, out of nine hundred and thirty-seven men who embarked, six hundred and thirty-eight were sick, and two hundred and forty died.

That yellow fever prevailed in New Orleans in 1809 is evident not only from the statements of Dr. Heustis, but also from the following facts communicated to Professor Hosack, of New York, by a gentleman of New Orleans:

"It is well known to nearly all the inhabitants of La Fourche that in the year 1809 Captain Edward V. Turner and his wife, who resided at Point Houmas Plantation, lost their lives by opening a trunk of clothes, which had been sent from New Orleans during the prevalence of yellow fever; that they immediately sickened and died with black vomit, as did also the negro nurse who attended them."—An Account of the Yellow Fever as it Prevailed in the City of New York in the Summer and Autumn of 1822. By Peter S. Townsend, M. D. New York, 1823. Appendix, 345.

1809.—The revolution of St. Domingo had caused a French emigration into the Island of Cuba, and the ruthless invasion of Spain by France was a cause of another exodus of these same refugees, who sought in Louisiana an asylum which was denied them in that country, where they had become objects of hatred and suspicion. In the month of June, many of these emigrants had already arrived in New Orleans, some with their slaves and whatever other property they could bring with them, and others utterly destitute. Notwithstanding the hostility shown to them by a portion of the population of Louisiana, the flood of emigration had continued to pour in, and on the eighteenth of July their number amounted to 5759, of whom 1798 were white people, 1977 free colored and black, and 1979 slaves. The perturbed state of the world at that time was the cause that many individuals, whose condition became unsettled, were looking around for places where they could better their fortunes, and not a few of them were daily arriving in New Orleans, from almost every quarter of the horizon which embrace the civilized portion of the earth, and particularly from Jamaica, Guadeloupe, and the other West India Islands. British aggressions and conquests in those regions had disposed many of their French inhabitants to seek for refuge elsewhere. In consequence of the steady tide of emigration which was flowing toward Louisiana, chiefly from the shores of San Domingo, Cuba, Jamaica, and Guadeloupe, house rent in New Orleans and the price of provisions had become so extravagantly high, that in the month of November, 1809, families who had but limited resources began to find them drawing to an end, and the number of the poor destitute were daily augmented.

In consequence of the frequent ravages of the yellow fever, particularly in the autumn of 1809, Claiborne recommended to the Legislature the policy of making, some general health laws, which should enforce cleanliness, and subject the shipping entering the Mississippi to those quarantine regulations which at other places had proved salutary."—Executive Journal, vol. 4, p. 219. Louisiana-American Domination. Gayarre, pp. 220-229.

By a census taken in the year 1810, by the Marshal of the United States, under an Act of Congress, it appears that the population of the Territory was as follows:

City and Suburbs of New Orleans, 17,242; Precincts of New Orleans, 7,310. Total 24,552.

Plaquemines, 1549; St. Bernard, 1020; St. Charles, 3291; St. John Baptist, 2990 St. James, 3955; Ascension, 2219; Assumption, 2472; Lafourche, 1995; Iberville, 267 Baton Rouge, 1463; Point Coupée, 4539 Concordia, 2895; Ouachita, 1077; Rapides 2200; Catahoula, 1164; Avoyelles, 1209; Natchitoches, 2870; Opelousas, 5048; Attakapa 7369. Grand total, 76,556.

We observe, therefore, that the population of the Territory of Orleans had been rapidl augmented by emigration from the United States, and in seven years (1803-1810) ha increased from 49,473 to 76,536, and the City of New Orleans from 8056 to 24,552.

On the tenth of January, 1812, the inhabitants of New Orleans witnessed the approac of the first vessel propelled by steam which floated on the Mississippi, the New Orlean from Pittsburg. The captain stated he had been but 259 hours actually on the way.- Martin's History of Louisiana, vol. 3, p, 311.

This speed seemed at this time to be marvelous, and the whole population flocked the river to examine the wonderful creation of the genius of man.

On the nineteenth of August, 1812, Louisiana suffered from a severe hurricane, t ravages of which exceeded those hitherto known by any one of the inhabitants. Sever buildings were blown down in New Orleans, particularly a very large and elega market-house.

1813.—In this year Claiborne expatiated at length on the sufferings and losses of t planters on account of the overflows of the Mississippi, from the Parish of Concord down to the Parish of Plaquemines, inclusively. Even New Orleans had been partial inundated by a break in the levee at Kenner's plantation, some ten or twelve miles abo the city. This overflow was not the only calamity which New Orleans was to suffer.

was afflicted as much by fire as by water. Constant conflagrations had produced a feeling of despondency in the inhabitants, as no one was sure of a safe night's rest in his own house, which might be burned over his head before the next dawn of day. To remedy this evil, Claiborne, on the twenty-sixth of June, offered a reward of $1000 to any individual who should give such information as might lead to the discovery and punishment of these lurking incendiaries.—History La. Am. Domination. Gayerre, p. 292.

Captain Edward Pelham Brenton records the interesting fact that the black soldiers of the West Indies, who comprised a portion of the British forces which invaded Louisiana the winter of 1814–1815, suffered severely from cold. Thus he says:

"Warm clothing for the black regiments had been urgently requested by Sir Alexander Cockrane, but none was sent; and these poor natives of a torried zone perished with cold on the shores of North America, where, on their arrival, they found the oranges frozen on the trees." "The weather was bad, the gales strong, and the cold intense. This fact is singular, and almost incredible, considering the latitude (29° N.) The soldiers, and particularly the black, suffered exceedingly."—The Naval History of Great Britain from the year 1783 to 1826. London, 1837. Vol. 2, pp. 530—532.

1815.—"On the evening of the eighth of January, 1815, the inhabitants of New Orleans witnessed the arrival of a long train of wounded prisoners, whose number amounted to about 400. Immediately a large quantity of lint and old linen for dressing their wounds, of matresses and pillows and other articles for their comfort, were furnished by private contributions. All kinds of refreshments and every attendance which their situation required were liberally provided by the spontaneous action of the citizens. The colored women of New Orleans have acquired an honorable reputation for the skillful nurses they supply during those fatal epidemics which have so often devastated that city. On this occasion several of them tendered their services gratuitously, and deserved the lasting gratitude of the numerous wounded whom they attended with the most humane disinterestedness."—History of La. Am. Domination. Gayarre, p. 478.

"The happy effect of peace was soon felt in Louisiana. On the sixteenth of March Governor Claiborne wrote to Mr. Monroe, Secretary of War: 'Great is the change which the return of peace has already made in this capital (New Orleans). Our harbor is again whitening with canvas; the levee is crowded with cotton, tobacco, and other articles of exportation. The merchant seems delighted with the prosperity before him, and the agriculturist finds in the high price for its products new incitements to industry.'"—Ibid, p. 535.

Near the close of the year 1815 the entire population of Louisiana did not exceed 90,000 souls, of whom one-half were black. The greater portion of this number were concentrated in the city of New Orleans and upon the river coast for thirty miles below and seventy miles above the city. The inhabitants of these river settlements were chiefly Creole French, with a small admixture of Anglo-Americans. It was only after the year 1815, when Louisiana was relieved from the dangers of foreign invasion, and began to reap the advantages of steam navigation on the river, that the State and New Orleans began to take the proud rank they now enjoy, in population, commerce, agriculture, and arts. In 1830, the State had increased to 215,740 persons, including 126,300 blacks. The census of 1840 gave an aggregate of 352,400 souls, including 168,452 slaves, which in 1845 had increased to more than 400,000. In point of agricultural and commercial importance, Louisiana had advanced to an elevated rank as early as 1830. In mercantile transactions, New Orleans in 1840 had attained a standing which placed her second only to New York, and the staple productions of the State were perhaps inferior in value to none in the United States.

1817.—A gentleman of New Orleans communicated to Professor Hosack the fact that in 1817 a trunk of dry goods or clothes were forwarded to the Choctaw Agent, who caught the yellow fever by unpacking the trunk, and died with black vomit. This circumstance, as well as the name of the Choctaw Agent, was well known to Mr. Flower, of New Orleans.—An Account of the Yellow Fever as it Prevailed in the City of New York in the Summer and Autumn of 1822. By Peter S. Townsend, M. D., p. 346.

A Medical Examining Board, "Comité Médical," having functions also of an advisory character relating to the public health, was in active operation in 1817.

That a well-organized medical society, composed of accomplished and learned French physicians, existed in the years 1817 and 1819, is evident from the following observations relating to the epidemics of yellow fever of these years, which I have derived from various original sources, but chiefly from the records of the Societe Médicale:

1817.—The yellow fever committed ravages in New Orleans during the summer and fall of 1817, confining itself chiefly to Europeans and Americans. The epidemic declared itself during the month of July, but in the preceding month of June symptoms of the disease had been manifested in various portions of the town, but chiefly at the Civil Hospital, where it showed itself before the arrival of the schooner from Havana, which had lost part of her crew by the vomito. The disease continued its ravages dur-

ing July; assumed a greater degree of intensity in August, on account of the great number of Europeans who landed and Americans who came down the river. The epidemic diminished after a severe storm, which took place at the commencement of September. The weather was changeable until the twentieth of that month, then the south wind commenced blowing again; the heat increased, accompanied with dampness, and the disease attacked several individuals newly arrived in the city. At length it disappeared in the month of October, except at the Civil Hospital, where it reigned for some time.

"MM. Gros and Gerardine, in their '*Rapport*, Fait a la Societé Médicale, sur la Fièvre Jaune, qui a regné d'une manière epidemique, pendant l'Eté de 1817,' held that the disease was caused by the peculiar topography of New Orleans; abundant rains filling the stagnant marshes; excessive heat of the summer and influx of strangers. This disease of endemic nature has become epidemic on account of a concurrence of circumstances favorable to its progress and developement. It has not been contagious, but it is supposed that, under certain circumstances, it may become contagious.

1819.—Yellow fever visited New Orleans as usual in the autumn. "But a great part of her inhabitants had become almost reconciled to its ravages, from the frequency of its return. For these it had no more terror than had the ancients for the skull which used to figure among the roses, and other legacies that adorned their banqueting tables. There were even some who felt friendly to the scourge, as, in their opinion, it checked that tide of emigration which otherwise would have speedily rolled its waves over the old population, and swept away those landmarks in legislation, customs, language, and social habits, to which they were fondly attached."—*History of Louisiana: American Domination. Gayarre, p*, 636.

1819.—The yellow fever of 1819 appeared on the seventh of May, when one, named John Gifford, was attacked and died. After this it manifested itself in another fatal case, continued in a sporadic form, augmenting progressively until the commencement of August, at which time the patients multiplied at such a rate at the hospital and in the town, that from that time it was regarded as an epidemic. It continued with great intensity until the commencement of August, at which time the patients multiplied at such a rate at the hospital and in the town, that from that time it was regarded as an epidemic. It continued with great intensity until the commencement of November when the number of patients diminished in a sensible manner, until the middle of December, which was regarded as its definite termination. The committee of physician appointed by the "Societé Médicale de la Nouvelle-Orleans" to investigate the origin and nature of this epidemic, state that the yellow fever of 1819, as well as that of 1817 manifested itself sporadically from the month of May, but it became, at an earlier date an epidemic in 1817, as it was regarded as such in the month of July, whereas it was not so pronounced in 1819, until the commencement of August; which appears to indicate that the cause was more intense in 1817; however, the epidemic of 1819 lasted a longer time, terminating in December, while that of 1817 was considered as having terminated in October. The greater number of persons affected in both epidemics were Europeans or Americans, recently arrived. The Creoles of New Orleans, however, were not entirely exempt from the ravages of the fever. In 1817, not one negro is said to have been attacked by the disease, whereas in 1819 several died with yellow fever. Malarial and intercurrent fevers were more common in 1817. In 1819, yellow fever superseded all other diseases.

The committee referred the yellow fever in 1819 to the burning heats of July, August and September, frequent rains, and stagnant water in the marshes. They regarded the yellow fever of 1819 as constitutional, non-contagious, indigenous (of spontaneous origin), and *non-imported*. Individuals contracting the disease in the city did not communicate it to their families in the country. Not one of the inhabitants of St. Domingo was attacked by the yellow fever of 1819. In fine the committee* regarded the yellow fever of 1819 as due to heat, humidity, and local causes.

1820.—A gentleman of New Orleans communicated the following facts to Professor Hosack, of New York, illustrating the contagious nature of the yellow fever of 1820:

"During the present season (1820) a Miss Ouden, daughter of the watchmaker, who had lately arrived from France, and resided with a Miss Vignon, whose father lives near the Catholic Church, caught the yellow fever, and was sedulously attended night and day by her friend till given over by her physician, when, to avoid the distressing scene of her disease, Miss Vignon retired to the school of Mr. La Fort, up the coast, which at that moment enjoyed perfect health. Miss Vignon, a Creole, was not affected with the disease, and it did not occur to Mr. or Madame La Fort, that she could communicate it by means of her clothing, etc. Mark the result! She, who had been the bed-fellow of Miss Ouden, also slept with one or both of the Misses Glovereys, nieces of Madam

* Rapport Publié au nom de la Societé Médicale de la Nouvelle-Orleans, sur la Fièvre Jaune qui a regné épidémiquement, durant l'Eté et l'Automne de 1819. Nouvelle-Orleans. The members of the committee were Trabue, "President de la Societé Médicale," Fortin, President du Comité, Martin, Conn Miltenberger, Lacroix and Thomas, "Secrétaire Rapporteur."

Fort, who both took the fever and died of its worst symptoms! Fortunately, the medical attendant in that institution is one of those liberal practitioners, who so far from seeking to persuade others that this disease is not infectious (and thereby being the means of its circulation), enforces every possible precaution; and at his instance the pupils were immediately dispersed to places of security, one orphan boy, John Rouve, of Bayou Sara, only excepted and he having no place of refuge, fell a victim to the black vomit. Not one of those who left the seminary at that first alarm took the disease.

"If you are acquainted with that part of the upper suburbs called the Nun's Point (a little below Rousseau's plantation) you must have remarked its high and healthy situation, elevated several feet above the level of the city, at a great distance from the swamp and all stagnant water. There the inhabitants enjoyed the state of health to be expected from the purity of their atmosphere, entirely isolated from that of the city, till the following circumstances spread among them desolation and death. Next door to Robin de Logny's there is a very inferior kind of a boarding-house, kept by a man named Marsh, who it seems went to town in quest of *sick boarders*, and having found one (Gilfillan, of the State of Pennsylvania) with the yellow fever, he brought him to his house in a carriage, regardless of the safety of the other inmates. On the second or third day after his removal Gilfillan died; next a Mrs. Jones, of Virginia; then Mr. Crane, Madam and Mr. Granville, all of Ohio; a young child of Mrs. Howell, and lastly, one of Marsh's own children, all died of black vomit. A Mrs. Vodridge and a mulatto woman likewise had the yellow fever; the former was saved by being removed to a female hospital, and the latter recovered. Marsh, his wife, and Mrs. Howell, who had the disease last year, appear to be the only persons in that house who did not take the infection.

"There is a long red building opposite to Madame Nadian's, the property of John Mornay, which is divided into six tenements, and is usually occupied by as many families. In this building there were the following persons: Madame Odrigues, a Creole; Mr. and Mrs. Schofield, Mrs. Hill and her daughter, the widow Jones, both of which families had several children; Mr. Rodgers, chairmaker, and his wife; besides these there lodged at Mrs. Hill's a Mr. Napper, a carpenter, and a Madame Odrigues, also John Smith, a mason. The fever was first brought among them by Napper, who caught it in the city, and died at Mrs. Hill's; a negro woman caught it of him, and recovered; next Mrs. Jones, who also attended Napper, caught it in the city, and died at Mrs. Hill's; next Mrs. Hill, whose body being taken to the grave by John Smith he complained of the unusually offensive smell, and sickened and died also. All these were marked cases of yellow fever, and terminated in *black vomit.* Two younger children of Mrs. Hill's and two of Mrs. Jones' also had the disease, but recovered. In the same building Mr. Rodgers and his wife both had the yellow fever, and the latter died. Mr. and Mrs. Schofield likewise had it. Within gunshot of the same spot, in a kitchen of John Mornay's former abode, lives an honest German, usually called Dutch Joseph. This man being on board a German vessel in the river, infected with yellow fever, found an acquaintance extremely sick, and was induced by compassion to bring him to his own dwelling, where the man shortly died of that disorder, having first communicated it to Joseph's own wife and a young girl, both of whom also died, and but for the attention of Dr. Forsyth and the introduction of Guyton Morveau's fumigation it is probable the whole household would have perished.

"The above facts are not only confirmed by eye-witnesses among the survivors, but by Dr. Forsyth himself, who attended most of the above patients, and who has very properly taken notes of the circumstances, under the most solemn conviction that the above numerous cases of fever originated in the contagion communicated by the three individuals respectively stated.

"In the meantime there are families within view of the three last described houses, and consisting of a dozen persons, unseasoned to the atmosphere of the city in the sickly months, who have remained exceedingly healthy and perfectly secure from malignant diseases by vigilantly guarding against any communication with the sick.

"Having thus detailed to you the manner of the yellow fever being introduced by four infected individuals into as many different habitations, all of these situated in a pure atmosphere, free from every predisposing cause of disease, and shown that, including the *four* first cases, about *thirty* persons have caught the infection, of whom not less than eighteen have died, I beg you to reflect on the probable consequence of four similar cases being introduced among the dense population of any city in the Union, and whether thousands would not have fallen victims unless effectual measures were adopted to interpose a barrier between the sick and the sound.

"There were one or two other striking instances of contagion that occurred below the city. An Irishman who went from town to General Wilkinson's plantation fell sick shortly after his arrival, and died with the black vomit. He *was attended by a man who had not been to town during the season; he also caught the disease,* and died.

"The yellow fever was likewise taken to Mr. Fleckner's plantation by a white man from town, who there died; also the negro nurse who attended him, and the nurse of that negro also.

"Mr. Livingston's overseer, who had not been near the city, visited one of those sick white men, and he also took the disease, and died with black vomit.—An account of the yellow fever as it prevailed in the city of New York in the summer and autumn of 1822 By Peter L. Townsend, M. D. New York, 1823, pp. 346-349.

1820—The deaths from yellow fever for the year numbered 400. Deaths from yellow fever in the hospital, eighty-two. First admission, July 21; the last, December 21.

In this year the physicians of New Orleans and its vicinity, "believing that a frequent interchange of opinions on subjects connected with their profession is the most effectual mode to promote its interest and extend their knowledge," formed a society or association known by the name of the Physico-Medical Society of New Orleans.*

ESTABLISHMENT OF THE FIRST QUARANTINE AND BOARD OF HEALTH IN NEW ORLEANS.

The City and State authorities, fully alive to the sanitary interests of New Orleans, enacted health laws of the most stringent and extensive character, on the sixth of March, 1816, and eighteenth of March, 1817. Although these acts appeared to exhaust the subject of hygienic legislation, they had no apparent effect on the march of yellow fever.

Dr. Bennet Dowler states that quarantine laws were enacted in the winter or before the hot season (Tableau of the Yellow Fever of 1853, p. 14), but Dr. W. M. Carpenter quotes the New Orleans Gazette to the effect that "In consequence of the positive proofs of the importation of the disease in the dreadful year of 1817, the Legislature of that winter passed a quarantine law which, though far from perfect in its structure, might have been considered as a pledge of more efficient precaution."—Sketches from the History of Yellow Fever, p. 17.

The mortality for August, 1817, was 487; September, 304; October, 172; total for the three months, 965. This record was taken from the various cemeteries. Dr. Bennet Dowler gives the mortality during five months, as white male adults, 760; white female adults, 63; a ratio of more than twelve times less than the former; total mortality for five months, 1142. The Physico-Medical Society, on the contrary, reported the deaths in August, 304; in September, 178; in October, 91; in November, 91; in December, 74. From these and various other data, Dr. Dowler estimated the deaths from yellow fever this year, at 800.

Governor J. Villeré, January 6, 1818, in his annual message, says: "That during the course of the last summer, the yellow fever had extended its ravages over the city chiefly falling on newcomers, but many of our citizens were its victims." He thinks that the disease was imported, and regards quarantine laws favorably.

The yellow fever reappeared in New Orleans in 1818, and according to the estimate of some authors, the mortality amounted to 1151. Dr. Bennet Dowler gives the following statistics for 1818: Deaths, white male adults, 324; of female adults, 81; white children, 87; black male adults, 219; black female adults, 162; black children, 277. The mortality augmented in each month until September, in which 166 died. Total whites, 492; total blacks, 658; grand total, 1151. Dr. Barton does not include 1818 among the epidemic years, and the statistics given by Dr. Dowler evidently relate to all diseases.

An act approved March 6, 1819, repeals the act establishing a Board of Health in New Orleans, the health officer and all laws for the prevention of the introduction of pestilential, malignant and infectious diseases; directs the sale of the lazaretto and all its property; investing the Governor with authority to establish quarantine by proclamation at his sole discretion.

As we have seen, yellow fever prevailed as a destructive epidemic in 1819. The city proper had whites 13,604; blacks 13,592. The city and suburbs contained 45,958 souls. Mortality by months, beginning with January, 70; February, 102; March, 97; April, 7[illegible] May, 120; June, 130; July, 130. August, 292; September, 594; October, 513; November 134; December, 109; total 2,369. It will be observed that the total mortality for August, September and October was 1,199, during the prevalence of the yellow fever, or over one-half of the entire mortality for the twelve months. These figures taken from the reports of the medical society and cemeteries apply probably only to the city proper.

Mr. Nuttal, the naturalist, in his travels, estimates the victims to yellow fever this year in the city at from five to six thousand, an aggregate greatly exceeding probability.

In the official report of the United States Surgeon-General, it is said: "At New Orleans it was estimated that upwards of 3,000 died of yellow fever; and it was not until after the first of December that it was deemed prudent to return either to the city or Natchez. The interior of the country, in the Southern States, seemed to suffer in a corresponding ratio. In the West Indies the fever exhibited a still greater mortality."

The grand total mortality, according to the report of the Medical Society (supposed to include only the incorporated limits) is but 1337; the males being 1142, the females [illegible] blacks, male adults, 182; female, 168. Deaths of blacks distributed almost equ[illegible]

among the months of the year, and little if any increased during the three epidemic months, while the deaths of white adults increased from 64 in July to 485 in September. Six white men died for one white woman.

According to Dr. Bennet Dowler, the first two cases of yellow fever in 1819 occurred May 7 and 12, the last death December 9. And as we have previously shown, the Committee of the Medical Society, after minute inquiry, failed to trace the disease to other than local causes.

Dr. Carpenter, on the other hand, in his special pleading for importation and contagion, says.

"In June, several vessels, with crews sickly with yellow fever, entered from Havana, and about the first of July cases began to appear among the shipping in the harbor. The Governor now proclaimed quarantine, by a power vested in his hands, by the act repealing the quarantine law. The disease, however, had already made some progress, and the thing was given up, and the vessels continued to come in, and some from Martinique, which were known to have lost some of their men on the voyage, and even on their way up the river, with the worst type of the 'vomito prieto,' and not a voice was heard to prevent their mooring on the levee. The disease became epidemic before the middle of August, and assumed a character of the highest malignity; medicine lost its effects; the skill of the physician was baffled, and multitudes were carried to the grave."—New Orleans Gazette, January 7, 1820, Sketches from the History of Yellow Fever, p. 18.

It was held by some that the disease had originated in the city, before its introduction in the way mentioned by Dr. Carpenter.

On the other hand, Dr. Dupuy de Chamberry, in his historical sketch of yellow fever, as it appeared in this city in 1819, says: I formerly believed the yellow fever to be contagious, but since I have been in the midst of it, my numerous practical observations have never been able to furnish me with one proof of this much dreaded attribute. Indeed, the result has been quite the reverse; and I am now convinced that the disease is permanently fixed to the spot, and within the limits of the place which has created it. No one case occurred beyond the limits of the city, during its prevalence in the years 1817 and 1819, that could be traced to our innumerable patients, although daily intercourse was kept up with the people of the neighboring estates and plantations. A great number of our inhabitants who carried the seed of the disorder abroad, seeking refuge from the danger at a distance, suffered an attack of the fever and died, but in no instance was it communicated to their friends. Fifty times have I had my hands besmeared with the putrid blood, black vomit, or fœtid slimy matter or perspiration. Fifty times have I been immersed in the effluvia issuing from a dead or living subject, and never been infected by the disease. From extensive observations I infer that the yellow fever of this place is a disease, *sui generis*, the product of local causes, and neither contagious nor exportable. Flight from the infected spot is the only preservation, and a distance of three miles appears to be quite sufficient to inspire the fullest confidence."

New Orleans was again visited by an epidemic of yellow fever in 1820. Deaths from yellow fever in the hospitals, 82. First admission, July 21; the last, December 21. The deaths for August from all causes were 289, September 402, October 177; total 868. During the same months, in 1817, the mortality was 965, and in 1819, 1199. Dr. Carpenter states that "about the twentieth of July, it became known that several cases of yellow fever had appeared among the shipping, and some at boarding houses. When the Mayor desired Dr. Davidson to examine all the vessels which had lately entered the port of New Orleans from the West Indies, where the yellow fever was then prevailing, who made diligent inquiries into, and investigated the grounds for the rumors which had prevailed in the city for some days past, that malignant fever had made its appearance, respectfully reports that:

"The schooner Gold Huntress, Martin master, from Havana, entered on the seventeenth of June, having lost two men on the passage with yellow fever; also, that the brig Charles Fawcett, Lamon master, from Matanzas, arrived on the tenth of July, having lost two men on her passage, and having others sick with yellow fever."—Letter of Dr. G. C. Forsyth, extract from New Orleans Gazette, November 15, 1820. Sketches from the History of Yellow Fever, p. 19.

Governer Villeré declared "that the scourge of war is preferable to yellow fever; that the city had been twice ravaged in three years," (1817, 1819), and that it is contagious." He urged the Legislature to pass quarantine laws, in which he had the greatest confidence as a preventive.

Governor Villeré, a firm advocate for contagion and quarantine, in his message of November 22, 1820, in relation to the existing epidemic of yellow fever, said:

"All the medical faculty appear definitely to have adopted the opinion that the yellow fever, which during the last year has plunged us once more into mourning and desolation, is not contagious" But he argued: "During the months of August, September and October there has been almost constantly in the prison of this city a great number of prisoners, and not a single one among them has been affected with the disorder. If the

yellow fever were natural to our climate, how has it happened that, among such a number of persons, heaped together in so small a space as the prison in this city, not a single one should have been attacked?"

Dr. Chabert, a physician of New Orleans, opposed the Governor's argument as to the prison, and maintained that the Creoles never take the yellow fever, though they do not shut themselves up to avoid it.

Governor Villeré reviews the report of the Medical Society for the current year, dissents from its deductions, which he regards as those of all the faculty, and denies what he calls "The constitutionality of the yellow fever."—Tableau of the Yellow Fever of 1853, etc., by Bennet Dowler, M. D., p. 17.

On the eighteenth of December, 1820, Governor Robertson, in his inaugural message, urged the Legislature to establish quarantine against yellow fever.

The quarantine laws passed by the Legislature in February, 1821, creating a Board of Health, with plenary powers, legislative, judicial, executive, pecuniary and sanitary, modeled after codes the most rigid, and enforced by the heaviest penalties, were carried into effect in March of the same year.

The quarantine ground, established at the English Turn, including incidental expenses, cost over $22,000.

The Board of Health commenced its duties on the sixth of March, and instituted measures for cleansing the city, improving its salubrity, and providing against the introduction of infectious diseases. The quarantine was under the direction of the Board of Health, and vessels arriving in port were compelled to contribute to its support. The board held its meetings every Tuesday afternoon at the Customhouse, until the first of June, and from that time until the first of November every day, excepting Sundays. The Mayor, Joseph Roffignac, was president ex-officio, of the board, composed of twelve members, who received no pecuniary compensation for their services.

The nature of the ordinance of the Board of Health may be gathered from the following extracts from the Code of Public Health :

"All keepers of inns, taverns, boarding-houses or other places, where persons are lodged for hire shall, once in every week, furnish the Mayor of the city, at his office, a list of the persons lodging or boarding at their houses respectively, according to the printed forms which the Mayor shall furnish at the expense of the corporation, which shall contain the names, apparent age, occupation, place of permanent residence, and nativity of such boarders or lodgers, and the time they have respectively lodged or boarded in such house ; and every person offending against this article, shall forfeit one hundred dollars ; or if knowingly furnishing a false return or list, shall forfeit a sum of five hundred dollars.

"If any seafaring man or sojourner shall, at any such house as is described in the foregoing article, fall sick at any time between the first day of May and the first day of November in any year, the master of such house shall, within twelve hours, report the name of such sick person to the Board of Health, and describe the place at which he lies sick, unless such person is attended by a physician duly admitted to practice, and for every neglect to make such report every keeper of such house shall forfeit $20.

"The sexton or keeper of every cemetery in the City of New Orleans, shall, every day during the months of May, June, July, August, September and October, and every week during the rest of the year, make a return to the Board of Health, of the persons buried in such cemeteries ; and for every such neglect such sexton or keeper shall forfeit $10.

"Every person practising physic in the City of New Orleans who shall have a patien sick of the yeliow fever, or bilious malignant or pestilential fever, between the first o May and the first of November, in every year, shall within twenty-four hours make report in writing to the Board of Health, at their office, and for neglecting to do so, h shall forfeit for every offense $300.

The year 1821 proved salubrious—a result attributed to the strict quarantine. Fro the following table it will be seen that the deaths were only slightly augmented durin the months of July, August and September :

ANNUAL REPORT OF INTERMENTS IN THE CITY OF NEW ORLEANS, COMMENCING O FIRST DAY OF JANUARY AND ENDING ON THE THIRTY-FIRST DAY OF DECEMBE 1821, AS MADE TO THE MAYORALTY AND BOARD OF HEALTH.

1821.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Tot
Whites.	Men	24	18	24	24	24	37	54	60	75	74	49	39	
	Women	3	4	3	5	6	4	8	7	0	10	10	5	
	Children	2	7	4	2	8	10	19	10	14	89	15	5	
Colored.	Men	13	12	9	6	16	10	18	20	17	12	14	10	
	Women	15	12	12	13	14	7	13	18	10	7	16	15	
	Children	14	17	15	13	15	23	16	18	6	15	14	15	
Total		71	70	67	65	85	91	128	133	122	126	118	89	1

Governor Robertson, in January, 1822, congratulated the Legislature upon the good fortune of New Orleans as being "the healthiest city" in the Union; but at the close of August the yellow fever appeared; it augmented throughout September, but it did not reach its culminating point until October; the month of greatest mortality having amounted to 665, exceeding that of the present month by 33. The following was the mortality for three months. August, 165; September, 532; October, 665. Total, 1,362.

Total deaths from yellow fever in 1822, 808, or one in 53.28 of the population. The highest number of deaths any one day of yellow fever was 60; and of all causes, 80. During 1833 the largest mortality any one day of yellow fever was 53; 1841, highest number from yellow fever 43, and the greatest mortality 60.*

Of the ten epidemics of yellow fever with which New Orleans has been visited since the cession of the American government, in 1803, up to the year 1842, the average loss per year has been estimated as not exceeding 800, and during that period the most fatal epidemic was that of 1822, when the deaths numbered 808, or one in 53.28 of the entire population. The total mortality from yellow fever in 1841 was 1,641, distributed thus by cemeteries: Catholic Cemetery, 42; Cypress Grove Cemetery, 77; Protestant Cemetery, 63; St. Patrick's Cemetery, 78; Lafayette Cemetery, 241; Jewish Cemetery (in Lafayette), 16; Potter's Field, 1,124. Total, 1,641.

Natives of the United States, 288; natives of foreign countries, 1,055; natives of countries unknown, 298. Total, 1,641.

The population of New Orleans, including the parish of Orleans, in 1820, was 41,350, and in 1840, 102,191. In 1841 the population of New Orleans probably exceeded 103,000; ratio of deaths from yellow fever one in 62.7 of population.

The value of the labors of the Board of Health in diminishing the rate of mortality and the prevention of yellow fever, by the so-called efficient and rigid quarantine, will be seen from the comparative mortality, from all diseases, during the three months of August, September and October of the years specified:

Months.	Years.							
	1817.	1819.	1820.	1822.	1833.	1837.	1839.	1841.
August	489	292	289	165	410	483	619	562
September	304	594	402	532	783	1188	648	1115
October	172	513	177	665	565	568	297	659
Totals	965	1390	868	1362	2758	2239	1554	2231
Ratio to entire population	1 in. 37 02	1 in. 33.60	1 in. 37.63	1 in. 31.60	1 in. 27.72	1 in. 38.76	1 in. 61.73	1 in. 48.15

The message of Governor Robertson, after the epidemic of 1822,* breathed sorrow and despair, and he could no longer exult upon the good fortune of New Orleans, as being "the healthiest city in the Union," and his bitter experience might well be heeded,

* It is worthy of note, as bearing upon the assertion that cold was capable of eradicating the cause of yellow fever, that the winter of 1821 and 1822, preceding the great epidemic of yellow fever of 1822, was one of the most severe ever experienced in Louisiana, as the following particulars recorded by a competent observer will show: "December 22, 1821, very cold, with hail; Sunday, December 23, ice one inch thick, and Fahrenheit's thermometer stood 20° above zero—*on this day*, cold as it was found in this climate, the volunteers had a parade and were reviewed by the Governor; December 24, cold; December 25, snow one inch in depth. In summer the average heat is 83°, the highest 94°, all in the shade. Mr. Peter Maspero, a maker of thermometers, and an old and respectable citizen of New Orleans, informed the observer in 1821, "that for seventeen years he had been in the habit of observing the thermometer, and never knew it to rise higher than 94°, which occurred last year; and two years previously to 93°; the instrument stood in the shade in his store." It was noted at an early day that New Orleans enjoyed the advantage of pleasant and refreshing breezes throughout the warm season.

The extremely mild temperature of the summer climate of Louisiana, and the much greater severity of the cold of winter than could be expected below latitude 33° North, was a phenomenon which more than sixty years ago engaged the attention of a few thoughtful observers, without at that time receiving a satisfactory solution. As vegetable productions are the only decisive marks of climate, they offered to those earlier observers ample proof of how much more temperate the climate of Louisiana was than that of similar latitudes on the Eastern Continent. The orange tree flourishes in Europe above 38° N. Latitude, the sugar cane about the same height; neither of them have been cultivated with success in America as high as 32° N. The cotton and other tender plants have frequently been killed in Louisiana by frosts late in April or again in the latter days of September. In Louisiana the intervals between frosts may be called the months of May, June, July, August and September, though instances have occurred in Louisiana of frosts in September. The heat in summer seldom amounts to 90° F., and the medium temperature of well water is 52° F —*Paxton's Directory of New Orleans, pp.* 25-26.

List of Governors of Louisiana from the first settlement to the administration of Governor Robertson:

French—Sauvolle, 1699; Bienville, 1700; Demonis (died on his passage), 1708; Tremonthe Cadillac, 1713; L'Epinay, 1717; Bienville, 1718; Périer, 1826; Bienville, 1733; Vandreuil, 1744; Kerlerec, 1753; D'Abadie, 1763; Aubrey, 1765

Spanish—Ulloa, 1766; O'Reilly, 1769; Unzegua, 1770; Galvez, 1777; Miro, 1783; Carondelot, 1700; Gayoso, 1796; Salcedo, 1800.

American—W. C. C. Claiborne, 1804; James Villeré, 1816; J. B. Robertson, 1820.

when so-called sanitary reformers, attribute the absence of yellow fever from New Orleans, wholly to their pretentious, but superficial, efforts.

"It is," says Governor Robertson, "an idle waste of time for me to inquire into the causes, origin and nature of this dreadful malady." * * * * "The State resorted to quarantine, under the expectation that it would add to the chances of escape from this dreadful visitation. If this hope be fallacious, if no good effect has been produced, if even a procrastination of its appearance has not resulted from the measure, then should it be abandoned, and our commerce relieved from the expense and inconvenience which it occasions."

In 1823, the Committee of the House of Representatives on Quarantine Laws reported that "during the last year (1822) notwithstanding the *strictest compliance with these laws*, our expectations were frustrated at the very moment when we thought we could indulge the hope of the most complete success. The season was far advanced, and in the month of September this metropolis enjoyed the most perfect health, when the yellow fever made its appearance."

"Notwithstanding the signal and lamentable failure of quarantine in 1822, the committee of the House of Representatives, of which F. Grima, Esq., was chairman, recommended its *continuance in the most rigid form, because it had not been tried sufficiently long, and because other States had similar regulations.*"

The Board of Health upon this occasion, as well as upon many others, were not slow in finding an unfortunate vessel and some miserable individuals, to whom they attached the odium of having introduced the disease. The Board of Health of 1822 set a worthy example to succeeding boards, in expressing faith in the efficacy of quarantine to exclude yellow fever from New Orleans. Thus they held the following language:

"The Board of Health believe it their duty to do away with the impression made by interested persons, to induce a belief in the inutility of the powers which you have so wisely conferred on the Board, for the establishment of quarantine, which these persons wish to see destroyed." * * *

"This opinion is diametrically opposed to that of the Board of Health, who believe that the yellow fever is contagious, and that the establishment of quarantines is necessary to prevent its introduction."

The citizens, however, were not convinced by the arguments of the contagionists, as to the value of their system to prevent yellow fever, and determined to petition the Legislature to abolish the quarantine laws.

On the twenty-third of January, 1823, a large public meeting took place, in which it was moved and carried, "*that the late epidemic had tested the total inefficiency of the quarantine laws and regulations*; we consider them not only useless, but in the highest degree oppressive and injurious to the commerce of this city; and that application ought to be made to the Legislature for the purpose of having them annulled." A memorial was addressed to the Legislature accordingly for that purpose. The Legislature, however, took no decisive action upon the matter. The quarantine continued in force. The health of the city continued good throughout 1823, only two cases of yellow fever having been recorded in the books of the Charity Hospital.

The Governor, in his message of January, 1824, congratulated the Legislature on the health of New Orleans, and proclaimed the city free from "*all contagious diseases*," but on the fifteen of November of the same year, the Governor in his message says: New Orleans has been again subjected to the dreadful scourge," and suggests the expediency of closing the business season in midsummer, and recommends a general flight to the unacclimated.

Mayor J. Roffignac in his message dated September 11, 1824, gives the following exposition of the causes of yellow fever:

"The opinion of professional men on the primary cause of the insalubrity of New Orleans, tends only to confirm the idea which must occur to the mind of every attentive observer, on looking at the topographical situation of our city, to wit: that these causes are of two kinds; the one arising within and the other without the city itself, and that both ought to be counteracted.

"The internal causes are: 1. The filth daily created in a populous city. 2. The low grounds and pools where stagnant water lies, the wooden gutters, constantly wet and fermenting under the rays of a torrid sun. 3. The want of privies in most of the populous districts, which renders it necessary to recur to the disgusting and dangerous use of tubs.

"The external causes are: 1. The marshes lying north and west of the city, uncovered but undrained, and deprived, by the cutting down of trees, of the shelter formerly afforded to them by the shade of a luxuriant vegetation, for which the very miasms that now spread death and desolation among us, were a source of life and vigor. 2. To the south and east, the Mississippi, which in its periodical retreat at the hottest season of the year, leaves on its banks a great portion of the filth which has been thrown into the current, but is brought back by eddies. 3. The winds, which at the moment we feel most secure, may, as was the case in 1822, convey to us the deadly effluvia of the dangerous spots, which they sweep in their course."

Mayor J. Roffignac does not allude to *contagion*, nor does he allude to the *quarantine*, which had afforded no protection, and proved a delusion against disease and a serious obstruction to commerce.

The quarantine had been tried for three years, and yet two epidemics had occurred; the contagionist began to waver, and, the joint committee of both houses of the Legislature disagreeing on quarantine, were discharged from the consideration of the same on the last day of November, 1824.

Experience convinced the public that quarantine was not only useless, but absolutely injurious to a city so exclusively commercial; that a free untrammeled trade with freedom of ingress, egress and progress, was a social necessity involving the question of subsistance or starvation. On the nineteenth of February, 1835, the Legislature repealed the quarantine laws which it had enacted four years previously, and at the same time the quarantine grounds were directed to be sold. During the eight years which followed, yellow fever was never so destructive as in 1822, under a strict quarantine, when, according to some authorities, as the Reverend Timothy Smith, who visited New Orleans in 1823, 2000 died of that malady, although the records examined by Drs. Barton, Dowler and myself, show only 808, the whole mortality for the three months ending with October being 1362. The maximum mortality upon one day rose to 80, of yellow fever to 60. The ratio of mortality in the Charity Hospital was enormous, out of 337 admissions 239 deaths and only 98 cures took place.

An ordinance for the establishment of another Board of Health in New Orleans, was again passed by the General Council in June, 1841. The Board consisted of nine members—three aldermen, three physicians and three private citizens. It was invested with ample powers to adopt and enforce such sanitary regulations as were thought conducive to the health of the city. This Board performed its functions during the first year of its existence; but we have seen that a fearful epidemic of yellow fever desolated New Orleans in 1841, destroying 1641 of her inhabitants, the mortality for the months of August, September and October reaching 2231,

The second year there was a falling off, but a dissolution did not take place till 1843. In 1844, the Board of Health having ceased to officiate, the General Council invited the Medico-Chirurgical Society to take charge of the sanitary interests of New Orleans. This proposition was accepted, and a committee of nine members, appointed with full powers to act as a Board of Health.

Acts were passed by the General Council fiteenth of August, 1846, twenty-third of June, 1847, and by the Legislature of Louisiana March 6, 1848, May 15, 1848, and June 13, 1855, relating to the Board of Health and quarantine. The present system of quarantine was established on June 13, 1855.

1833.—On the ninth of December, when the Legislature met, the State was just recovering from the terrors of the ravages produced during the preceding autumn by the yellow fever and cholera. Governor Derbigny informed them, that now "health prevailed throughout the whole of the State, and that the resources which her geographical position and inexhaustible fertility of her soil afforded her was so great that, after all these calamities, her situation was at present very prosperous."—History of Louisiana, American Domination, p. 655.

An ordinance for the establishment of another Board of Health in New Orleans was again passed by the General Council, in June, 1841. The board performed its functions during the first year of its existence: but an epidemic of yellow fever afflicted New Orleans in 1841, deseroying 1641 of her inhabitants. The second year there was a falling off in the interest of its members, but a dissolution of the board did not take place until 1843. In 1844, the Board of Health having ceased to officiate, the General Council invited the Medico-Chirurgical Society to take charge of the sanitary interests of New Orleans. The proposition was accepted, and a committee of nine members were appointed, with full powers to act as a Board of Health.

Acts were passed by the General Council, August 15, 1846, June 23, 1847, and by the Legislature of Louisiana, March 6, 1848, May 15, 1848, and June 13, 1855, relating to the Board of Health and quarantine.

MAYORALTY OF NEW ORLEANS.

GENERAL COUNCIL.

SITTING OF SATURDAY, August 15, 1846.

Be it ordained, etc., That the Branch Pilots for the Port of New Orleans and the officers of the customs for said port and District be requested to notify all masters of ships or vessels bound for this port having on board the small-pox or any contagious disease, that they are forbidden to come along aside of the levee in either of the municipalities until they have been visited by one or more members of the Board of Health and can produce a certificate of

MAIRIE DE LA NOUVELLE-ORLEANS.

CONSEIL GENERAL.

SEANCE DU 15 Août 1846.

Il est ordonne, etc., Que les Pilotes du Port de la Nouvelle Orléans, et les officers de douane du dit Port et District, soient requis de notifier à tous Capitaines de Navires ou Vaisseaux destinés pour ce Port, et ayant à bord la Petite-Vérole, ou toute autre maladie contagieuse, qu'il leur est défendu d'aborder la Levée dans les limites des trois municipalités, à moins qu'ils n'aient au préalable reçu la visite d'un ou plusieurs membres du Bureau de Santé, et puissent

convalescence from the said physician to the harbor-master to whom they may enter. The said ship or vessel shall come to anchor under Slaughter-House Point until they have received said visit from said physician under a penality of five hundred dollars, and that the Mayor be authorized to request the Collector of this port to notify the officers under his control to enforce the above ordinance, and that two hundred copies thereof be printed and delivered to the pilots and officers of the customs.

(Signed) W. H. WILDER, President.

Approved August 17, 1846.

A. D. CROSSMAN, Mayor.

A true copy.

A. MAZUREAU, Secretary.

MAYORALTY OF NEW ORLEANS.

GENERAL COUNCIL.

SITTING of JUNE 23, 1847.

An ordinance relative to vessels arriving at this port from Sea.

ARTICLE 1. *Be it ordained by the General Council of the City of New Orleans*, That all owners, captains, masters or commanders of vessels arriving at this port from sea, be and are hereby forbidden, whenever there may be any infectious or contagious diseases on board of such vessel, to moor such vessel at any of the wharves of either of the municipalities of this city, and it shall be the duty of said captains, masters and commanders of such vessels to anchor in the middle of the river below Slaughter-House Point, and there remain at anchor untill such infectious or contagious disease shall have entirely disappeared from such vessel, and any master, captain or owner of any vessel, contravening, shall pay a fine of one hundred dollars.

ART. 2. *Be it further ordained*, That it shall be the duty of the Mayor, whenever he may receive information of the arrival of any vessel having any infections or contagious disease on board, to order such vessel to come to an anchor in the middle of the river, below Slaughterhouse Point, and in case of the master or commander of such vessel refusing or neglecting so to do, the Mayor is hereby authorized to cause such vessel to be immediately removed to and anchored at the place above designated, and the owner, master or commander of such vessel shall pay a fine of one hundred dollars for neglecting or refusing to remove such vessel as aforesaid. and shall also pay the expenses of such removal.

ART. 3. *Be it further ordained*, That any owner, master or commander of a vesael who shall land or permit to land, within the limits of the city of New Orleans, any person or persons affected with any infectious or contagions disease, shall pay a fine of one hundred dollars for each and every person so affected they may land or permit to land.

ART. 4. *Be it further ordained*, That it shall be the duty of all owners, masters or commanders of vessels arriving from sea, and having any infectious or contagious disease on board, to come to an anchor as required by the first article of this ordinance, and immediately notify the Mayor of this city thereof; and the Mayor shall immediately notify the Board of Health of the arrival of such vessel, whose duty it shall be to proceed on board of such vessel and examine the persons affected, and report the result of their examination to the Mayor; and any owner, master or commander of a vessel refusing or neglecting to comply with the provisions of this article shall pay a fine of $100.

ART. 5. *Be it further ordained*, That whenever any vessel having any infectious or contagious disease on board, shall have been anchored as directed by this ordinance, it shall not BE LAWFUL for any person or persons to remove such vessel from her anchorage until the owner, master or commander of

produire de la part du dit membre un certificat de convalesence qu'ils présenteront au Capitaine du dit Port chargé de les placer. Les dits Navires ou Vaisseaux mettront à l'ancre à la Pointe de l'Abattoir, jusqu'à ce qu'ils aient reçu la visite d'un des dits membres du Bureau de Santé, et ce sous peine d'une amende de cinq-cents piastres; Et de plus; Le Maire est et demeure autorisé à requérir du Collecteur de la Douane de vouloir bien notifier les officiers sous son controle d'avoir à veiller à l'exécution de la présente ordonnance, et que deux cents copies en soient immédiatement imprimées et distribuées aux Pilotes et aux dits officiers de douane.

(Signé) W. H. WILDER, Président.

Approuvé le 17 Août 1846.

A. D, CROSSMAN, Maire.

Pour copie conforme.

A. MAZUREAU, Secrétaire.

MAIRIE DE LA NOUVELLE-ORLEANS.

CONSEIL GENERAL.

SEANCE DU 23 JUIN 1847.

Ordonnance Relative aux Navires arrivant de la Mer en ce Port.

ARTICLE 1. *Il est ordonne par le Counseil General de la villa de Nouvelle Orleans*, Qu'il sera défendu à propriétaires, capitaines, maîtres ou commandants de navires, arrivant de la mer dans ce port ayant à bord des dits navires des maladies contagieuses on pestilentielles, de faire aborder leurs navires à chacun des wharfs d'aucune des municipalites de cette ville; et il sera du devoir des dits capitaines, maitres ou commandants desdits navires, de les mettre à l'ancre au milieu du fleuve, au-dessous de la pointe de l'abattoir, et d'y mettre à l'ancre jusqu'à ce que les maladies contagieuses ou pestilentielles aient complètement disparu des dits navires, sous peine d'une amende de cent paistres pour chaque contravention.

ART. 2. *Il est de plus ordonne*, Qu'il sera du devoir du Maire, toutes les fois qu'il sera informé de l'arrivée d'aucun navire ayant a bord des maladies contagieuses ou pestilentielles, d'ordonner au dit navire de jeter l'ancre au millieu du fleuve au-dessous de la pointe de l'abattoir, et au cas ou le capitaine ou commandant du dit navire refuserait ou negligerait de se conformer à cet ordre, le Maire est autorisé à faire conduire ledit navire et de lui faire jeter l'ancre à l'endroit ci-dessus designé; et le propriétaire, capitaine ou commandant dudit navire paiera une amende de cent piastres pour avoir negligé ou refusé de conduire son navire comme il est dit ci-dessus; et de plus, il paiera les frais de deplacement.

ART. 3. *Il est de plus ordonne*, Que tout propriétaire, capitaine ou commandant d'un navire qui debarquera ou laissera debarquer dans les limites de la ville de la Nouvelle-Orléans. aucune personne affectée d'aucune maladie contagieuse on pestilentielle, paiera une amende de cent piastres par chaque personne ainsi affectée, qu'il aura débarquée or laisser debarquer.

ART. 4. *Il est de plus ordonne*, Qu'il sera du devoir de tous propriétaires, capitaines, maitres ou commandants de navires arrivant de la mer et ayant à bord aucune maladie contagieuse ou pestilentielle de jeter l'ancre ainsi qu'il est préscrie dans le premier article de la persent ordonnance, et de notifie immediatement le Maire de cette ville de ce fait; e le Maire notifiera immédiatement le Bureau de Sant de l'arrivée d'aucun de ces navires; et il sera du devoir des dits membres du dit Bureau de se rendre bord de ce navire et d'examiner les personne affectées, et de faire au Maire un rapport du resulte de leur examen. Et tout proprietaire, capitaine o commandant de navire refusant ou negligeant de conformer aux dispositions du present article, paier une amende de cent piastres.

ART. 5. *Il est de plus ordonne*, Que toutes les fo qu'un navire ayant à bord aucune maladie cont gieuse ou pestilentielle, aura jeté l'ancre comme est prescrit par la présente ordonnance, il ne se permis à aucune personne de déplacer ledit navi jusqu'à ce que le propriétaire, capitaine ou co

such vessel shall have first PROCURED to that effect a written permit from the Mayor of this city; and it shall be the duty of the Mayor, prior to granting such permit, to cause an examination of such vessel to be made by the Board of Health, and upon the Board of Health certifying in writing that all infectious or contagious disease has disappeared from such vessel, he shall grant permission to such vessel to remove from the anchorage and moor at any of the wharves; and each and every person or persons removing or attempting to remove any vessel or vessels from the anchorage as aforesaid, shall pay a fine of one hundred dollars.

ART. 6. *Be it further ordained*, That the fines and penalties imposed by this ordinance shall be recovered before any competent tribunal, for the benefit of the Board of Health of the city of New Orleans.

ART. 7. *Be it further ordained*, That the printer of this Council shall print one thousand copies of this ordinance and deliver the same to the Mayor, and the Mayor is requested to forward two hundred copies of the same to the branch pilots at the Balize and the Passes, with the request that they distribute the same to the captains and masters of vessels coming from sea.

ART. 8. *Be it further ordained*, That all ordinances contrary to the provisions of this ordinance, be and the same are hereby repealed.

(Signed) D. STICKNEY, President.
Approved June 18, 1837.
A. D. CROSMAN, Mayor.
A true copy.
A. MAZUREAU, Secretary.

mandant du dit navire ait obtenu à cet effet, du Maire de cette ville, une permission écrite. Et il sera du devoir du Maire, avant de déliverer la susdite permission, de faire examiner le dit navire par le Bureau de Santé, et lorsque le Bureau certifiera par ecrit que toute maladie contagieuse ou pestilentielle a disparu dudit navire, alors il accordera la permission de déplacer ledit navire et de le faire aborder à l'un des wharfs; et toute personne qui déplacera ou essaiera de déplacer aucun navire ainsi qu'il est dit ci-dessus, paiera une amende de cent piastres.

ART. 6. *Il est de plus ordonne*, Que les amendes imposées par cette ordonnance seront recouvrables pardevant tout tribunal compétent au profit du Bureau de Santé.

ART. 7. *Il est de plus ordonne*, Que l'imprimeur de de ce Conseil imprimera mille exemplaires de cette ordonnance et les delivrera au Maire, qui est requis d'en transmettre deux cents aux pilotes de la Balize et des Passes, avec prèire de les distribuer aux capitaines ou commandants de navires arrivant de la mer.

ART. 8. *Il est plus ordonne*, Que toutes ordonnances contraires aux dispositions de la présente soient et demeurent rappelées.

(Signé) D. STICKNEY, President.
Approuvé le 28 juin 1847.
A. D. CROSSMAN, Maire.
Pour copie conforme.
A. MAZUREAU Secrétaire.

CUSTOMHOUSE, NEW ORLEANS,
COLLECTOR'S OFFICE, November 2, 1849.

Inspectors of the customs, acting as boarding officers, will deliver to the captain or officer in command of every vessel entering the river from, which he may board, on board of which there may be any infectious or contagious disease, a copy of the above ordinances, and will promptly report to me all such cases, making a note on the manifest of the vessel thereof, noting the number of persons sick with such diseases, and the number that have died during the voyage, as may be reported to him by the captain or officer in command, or as may be ascertained from other reliable sources.

SAMUEL J. PETERS, Collector.

ESTABLISHMENT OF THE PRESENT SYSTEM OF QUARANTINE CHARGES ON JUNE 13, 1855.

The memorial of the ship owners and ship agents of New Orleans, now before the General Assembly, would lead the uninformed to believe that the present bill to regulate the quarantine fees at the Mississippi Station is something new and wholly different from the organic act of the Legislature which had been in force during the past twenty-seven years. But this is not the case.

1853-54.—Louisiana had been in 1853 deprived of thousands of her citizens in the most frightful epidemic she had ever witnessed. It had not confined its ravages to New Orleans, but had spread to distant parishes in the country.

In 1855, on the fifteenth of February, the Legislature met in Baton Rouge, a few months after the yellow fever had for a second time, in 1854, desolated the State, "the general prevalence of that disease," said Governor Hebert, in his annual message, "during two successive years, in the most malignant form, seems to authorize the conclusion that, supposing it to have been at any time of foreign origin, it has now annually a fixed habitation within our borders."—History of Louisiana, American Domination, Gayarré, p. 677.

AN ACT TO ESTABLISH QUARANTINE FOR THE PROTECTION OF THE STATE.

SECTION 2. *Be it enacted by the Senate and House of Representatives of the State of Louisiana, in General Assembly convened*, That there shall be a quarantine established below the City of New Orleans, on the River Mississippi, at a distance of not less than seventy miles, by the river, from the city; that the Board of Health to be elected under this act is hereby authorized to locate the quarantine ground, to receive the transfer of the necessary land in the name of the State, and to draw upon the Treasurer of the State for the necessary amount, out of the fund aupropriated under this act; *provided*, the consent of the Governor of the State is given to said purchase.

SEC. 2. *Be it further enacted, etc.*, That there shall be a Board of Health composed of nine competent citizens of the State, to be elected as follows: Three by the Council of New Orleans, on joint ballot, and six to be appointed by the Governor, by and with the advice and consent of the Senate; the said members shall be selected in reference to their known zeal in favor of a quarantine system. All the members of the Board shall be commissioned by the Governor for the term of one year, after having filed and subscribed in the

office of the Secretary of State, an oath well and truly to enforce and comply with the provisions of an a entitled "An act to establish quarantine for the protection of the State," and in case of neglecting or faili to comply with the above required oath within ten days after their appointment or election, their office sh be considered vacant.

SEC. 3. *Be it further enacted, etc.*, That the Board of Health shall meet once a month from the first November to the first of June, and once a week from the first of June to the first of November, and often as they may deem necessary.

SEC. 4. *Be it further enacted, etc*,, That the Board of Health shall meet and organize on the third Mond in April, and elect out of their own number a President, whose duty it shall be to reside in New Orleans a superintend the different quarantine stations of the State, and it shall be his duty to visit them as often the Board of Health shall deem necessary. He shall have the power to issue, during the adjournment, constables or the sheriff, all orders and warrants provided by the provisions of this act, and shall report the Attorney General all violations of the same. It shall be his duty to lay before the Board at each meet the business to be transacted, and a book in which he shall enter copies of all letters written by him. ord and warrants issued, and a detail of all his acts. He shall present at each meeting all communications warded to him, and a report of the resident physicians and treasurers, and perform such other duties shall be assigned to him by the Board of Health. He shall only be removed by impeachment, and sh receive a salary of $2000 a year.

SEC. 5. *Be it further enacted, etc.*, That four members of said Board shall form a quorum; *provided*, h ever, that no contract for building shall be entered into without the consent of a majority of the Board.

SEC. 6. *Be it further enacted, etc*, That the Board of Health shall authorize the Resident Physician to ploy, in case of need, an assistant physician at the Quarantine ground on the Mississippi River, who sh act as his deputy, and whose salary shall not be more than two thousand dollars a year. The Board Health shall have power to employ nurses and assistants to attend the sick, and such other persons as m be necessary to carry out proper quarantine regulations, and to fix their compensation; to fix the num of days of quarantine for vessels liable to it under sections ninth and thirteenth of this act, not to be than ten days; to determine how said quarantine shall be performed, and to make out all legal regulati not provided by this act nor contrary to the same, and necessary to carry out a proper system of quarant and to enforce the same by a fine not exceeding five hundred dollars; to make rules and regulations for serving good order and police within the limits of the quarantine ground. and to impose penalties for breach thereof; to contract for the necessary buildings at the quarantine grounds; to appoint a Secret who shall act as Treasurer, whose salary shall be fifteen hundred a year, and who shall furnish security sum of ten thousand dollars. It shall be his duty to keep a minute of the proceedings of the Board, all vouchers and expenditures made by authority of said Board. The Board of Health shall have powe remove, or cause to be removed, any substance which they may deem detrimental to the health of the of New Orleans, and the commissioners of the streets shall execute their orders, whenever not in con with the ordinances of the city, or the laws of the State; to pass and enforce sanitary ordinances for city, provided the same are approved by the Council and published as city ordinances; to define the duti officers employed by them, and impose additional duties to officers appointed under this act; to issue rants to any constable, police officer or sheriff in the State; to apprehend and remove such person or per as cannot be otherwise subjected to the provisions of this act, or who shall have violated the same, whenever it shall be necessary so to do, to issue their warrant to the sheriff of the city or parish where vessel may be, having violated the provisions of this act, commanding him to remove said vessel at quarantine ground, and arrest the officers thereof, all which warrants shall be executed by the office whom the same shall be directed, who shall possess the like powers in the execution thereof, and be enti to the same compensation as if the same had been duly issued out of any court of the State. The Go nor shall appoint a police officer to be designated as Marshal, who shall be under the control of said B of Health, and reside at the Quarantine Station, on the Mississippi River, whose duties and powers correspond to those of a sheriff or constable, so far as regards the execution of warrants and arrest persons for violation of said quarantine regulations, and for said services shall receive the annual al ance of one thousand dollars.

SEC. 7. *Be it further enacted, etc.*, That there shall be a Quarantine Station at some point on the Rigo and another on the Atchafalaya River, two miles below "Pilot Station," at the mouth of the Wax Bay the Board of Health is hereby empowered, and it shall be their duty to locate them agreeably to the visions of this section; but the provisions of this act shall only apply to the station at the Rigolets fro day of the issuing of the proclamation of the Governor, as provided by section thirteenth, declaring port on the lake-shore or on the Gulf of Mexico to be an infected place, and shall remain in full force suspended by a vote of two-thirds of the members of the Board of Health. The provisions of this act apply to, and be enforced at the Quarantine Station on the Atchafalaya River, from the first of May t first of November of each year; and also when the Governor shall have issued his proclamation, as prov by the thirteenth section, and in such a case shall remain in full force until suspended by a resolution for by two-thirds of the members of the Board of Health. There shall be no permanent building erect Pilot's Station on the Atchafalaya River, but the Board of Health shall use as an hospital for the rece of the sick, hulls and cabins of steamboats. The Board of Health shall employ an officer, whose du shall be, and who is hereby empowered, to require from captains of vessels, steamboats or crafts ha passed the station at the Rigolets, or on the Atchafalaya River, the permit of the Resident Pdysician Board of Health shall appoint a Resident Physician for each of the two Quarantine Stations on the Rig and on the Atchafalaya, and such other persons as may be necessary; *provided*, their salary shall run during such time as they shall thus be employed, and shall in no case exceed for the time they shall been thus employed, the salary of the same officers at the Quarantine Station for the same space of on the Mississippi.

SEC. 8. *Be it further enacted, etc.*, That the Resident Physician of the quarantine ground shall rece salary of five thousand dollars ($5000), and shall be appointed by the Governor of the State, by and wit advice and consent of the Senate, and removable at pleasure. It shall be his duty to visit every coming from any port and entering the mouth of the Mississippi River. He shall require the captain of vessel thus inspected to pay the following fees: For every ship, bark or sea-going steamer, the s twenty dollars, and fifteen for all other vessels; *provided*, nothing contained in this section shall ap any vessel or craft from New Orleans to sea and returning without having touched at any port, or quarantine, towboats excepted. To all vessels not coming from any infected district, as provided by se thirteen, or not having on board patients affected with cholera, yellow fever, pestilential, contagious fectious diseases, or not in a foul condition, a certificate to that effect shall be given. It shall be his d return to the Secretary of the Board of Health, a weekly list of vessels by him inspected, together wit amount collected for such inspections, which shall form a fund for the support of the quarantine.

SEC. 9. *Be it further enacted etc.*, That the Resident Physician shall have the power, and it shall duty, to detain at the quarantine ground, with their cargoes, crew and passengers, all vessels coming an infected district, as provided by section thirteen, or in a foul condition, or having on board p affected with cholera, yellow fever, pestilential, contagious or infectious diseases, during such time

may deem necessary—not less than ten days—to compel the captain to land the sick at the Quarantine ground. to fumigate and cleanse such vessels, and to submit to such rules and regulations as will be hereafter provided by the Board of Health, and that all costs incurred for vessels found in a foul condition, including the sum of five dollars for the support of each and every sick person landed at the Quarantine Station, shall be borne by the captain and owners, and shall be paid to the Resident Physician before a certificate, as provided by section eighth, shall be given.

SEC. 10. *Be it further enacted, etc.*, That the Resident Physician shall have such other powers as may be delegated to him by the Board of Health, not contrary to the provisions of this act and necessary to carry them into effect. It shall be his duty to remain at the Quarantine ground, attend the sick, and perform all such other duties as may be required of him by the Board of Health.

SEC. 11. *Be it further enacted, etc.*, That the Board of Health shall appoint a treasurer for the Quarantine ground on the Mississippi River, with a salary of fifteen hundred dollars ($1500) per annum, and who shall furnish security in the sum of ten thousand dollars ($10,000). It shall be his duty to attend to the finances, collect all sums of money due by vessels in a foul condition, account and pay over to the Secretary of the Board of Health all monthly balances in his hands, and shall receive and deliver the freight of all vessels ordered to be unloaded, and perform such other duties as the Board of Health shall require of him.

SEC. 12. *Be it further enacted, etc.*, That the Secretary of the Board of Health shall deposit in bank all moneys paid over to him and shall keep a correct account of the same. He shall moreover present at each meeting of the Board a statement of its affairs, and cause his accounts to be approved by the Auditor of Public Accounts every three months, and shall act as commissary for the purchase of provisions and supplies, and shall deposit in bank all moneys paid over to him, and perform such other duties as the Board of Health may assign to him.

SEC 13. *Be it further enacted, etc.*, That the Governor of the State shall issue his proclamation, upon the advice of the Board of Health, declaring any place where there shall be reason to believe a pestilential, contagious or infectious disease exists, to be an infected place, stating the number of days of quarantine to be performed. It shall be the duty of the Resident Physician to give timely notice to the Board of Health of the necessity of such proclamation. After such proclamation shall have been issued, all vessels arriving in the port of New Orleans, or at the Rigolets, or the Atchafalaya Station, from such infected place, shall be subject to quarantine, and shall, together with their officers, crews, passengers and cargoes, be subject to all regulations passed by the Board of Health, provided by this act. Every master of a vessel subject to a quarantine or a visitation, arriving in the port of New Orleans, who shall refuse or neglect either—first, to proceed with and anchor his vessel at the place designated for quarantine at the time of his arrival; second, to submit his vessel, cargo and passengers to the examination of the physician, and to furnish all necessary information to enable that officer to determine what quarantine shall be fixed for his vessel; third, to remain with his vessel at the quarantine ground during the period assigned for her quarantine, and while there to comply with the directions and regulations prescribed by this act, or by the Board of Health, or with such directions prescribed for his vessel, crew and cargo and passengers, by the Resident Physician, shall be guilty of a misdemeanor, and be punished by a fine not exceeding two thousand dollars ($2000), or by imprisonment not exceeding twelve months, or both, at the discretion of the court.

SEC. 14. *Be it further enacted, etc.*, That every person who shall violate the provisions of this act by refusing or neglecting to obey or comply with any order, prohibition or regulation made by the Board of Health, in the exercise of the powers herein conferred, shall be guilty of a misdemeanor, punishable by fine and imprisonment, at the discretion of the court by which the offender shall be tried. It shall be the duty of the captain of every towboat towing a vessel subject to quarantine or visitation, to leave such vessel at the quarantine ground and to inform the captain of the penalties attending a non-compliance with the provisions of this act.

SEC. 15. *Be it further enacted, etc.*, That the captain of any sea-going vessel, steamboat or towboat, violating the provisions of this act, or the rules and regulations established or to be established by the Board of Health, shall be considered guilty of a misdemeanor, and sentenced to pay a fine not exceeding five hundred dollars and imprisonment not exceeding one year.

SEC. 16. *Be it further enacted, etc.*, That the Resident Physician shall report to the Attorney General all violations of this act; and it shall be his duty to prosecute all person or persons thus offending; to collect the fines and remit the amount thereof to the Secretary of the Board of Health, whose duty it shall be to keep a separate book for fines collected, to be approved of every three months by the Attorney General, who shall receive such compensation as the board may fix for his services.

SEC. 17. *Be it further enacted, etc.*, That it shall be the duty of the Harbor Masters in their respective districts to demand of the captain of every vessel arriving from sea to New Orleans, the permit of the Resident Physician, and to report to the Secretary of the Board of Health all vessels having entered the port without such permit.

SEC. 18. *Be it further enacted, etc.*, That from the first of May to the first of November, all towboats plying from the mouth of the river to New Orleans shall be liable to inspection and quarantine, and it shall be the duty of the different Harbor Masters to require from the captains of said towboats the certificates of the Resident Physician, as provided by section eight, which certificate shall not be granted before a detention of at least five days; *provided*, nothing therein contained shall be so construed as to apply to towboats plying between New Orleans and the quarantine ground, and no further.

SEC. 19. *Be it further enacted, etc.*, That the captain of any towboat or steamboat who shall receive on board of his boat, freight, goods or passengers from a vessel liable to inspection or quarantine, or who shall receive goods or passengers from the quarantine ground, without the permission of the Resident Physician, shall be punished by a fine not exceeding two thousand dollars ($2000), and by imprisonment at the discretion of the court; and all violations of the provisions of this act at the Quarantine Station on the Mississippi River and at the Rigolets shall be tried by the Criminal Court of New Orleans, and all violations of this act at the station on the Atchafalaya River shall be tried by the District Court of the parish of St. Mary.

SEC. 20. *Be it further enacted, etc.*, That the Board of Health shall cause such extracts of this act to be made as they may deem it necessary for the information of masters of vessels arriving in this State, and shall cause a sufficient number to be printed and delivered to the pilots, to be distributed to the masters of vessels as before provided.

SEC. 21. *Be it further enacted, etc.*, That every pilot, or any other person acting as such, shall deliver to the master of every vessel inward bound, one copy of the printed extract from this act, which shall be furnished him by the Board of Health; and any pilot refusing or neglecting so to do, or aiding or landing any passenger or other person, contrary to this act, shall forfeit one hundred dollars for every offense.

SEC. 22. *Be it further enacted, etc.*, That every person who shall go on board of any vessel while performing quarantine, without the permission of the Resident Physician or his assistants, shall forfeit the sum of fifty dollars.

SEC. 23. *Be it further enacted, etc.*, That the Quarantine Station shall be known by that name, and its limits shall be designated by boards placed on the boundaries, on which shall be printed in large letters: "These are limits of the Quarantine Station."

SEC. 24. *Be it further enacted, etc.*, That the sum of fifty thousand dollars ($50,000), be and is hereby appropriated, out of any money in the treasury not otherwise appropriated, to be paid to the Secretary of the Board of Health, on a resolution of a majority of the board, payable by installments; *provided*, that the second and third installments shall not be paid until the accounts of the Secretary of the Board of Health shall have been audited and approved by the Auditor of Public Accounts for former disbursements.

SEC. 25. *Be it further enacted, etc.*, That the buildings to be erected at the Quarantine Station shall consist of —— at the station on the Mississippi River, of two separate buildings, as hospitals for the sick, of a small house as a residence for the officers appointed under this act, and of a well ventilated store for the reception of the freight of such infected vessel as the Resident Physician may deem necessary to cause to be unloaded. The buildings at the Rigolets shall be constructed of wood, and consist of a hospital for the sick and of a store for the freight of vessels or steamboats ordered to be unloaded. At the Atchafalaya Station a good shed shall be provided for the freight of vessels ordered to be unloaded. The Board of Health shall receive the transfer of such land as may be necessary at the Rigolets and on the Atchafalaya River in the same manner and under the same conditions as are required by section one, and all plans, specifications and contracts for the above buildings shall be submitted to and approved by the Governor of the State; *provided*, that the cost of said building shall in no case exceed the amount hereinbefore appropriated.

SEC. 26. *Be it further enacted, etc.*, That it shall be the duty of the Council of New Orleans, within ten days after the passage of this act, to elect three members of the Board of Health, as provided by section second of this act, and all acts, resolutions and ordinances passed by them after the expiration of the delay herein prescribed, and before the election of the members of the Board to be elected by them, shall be null and void.

SEC. 27. *Be it further enacted, etc.*, That the Board of Health, and their successors, are hereby created a body corporate, under the name of the Board of Health of the State of Louisiana, to sue and be sued under that title.

SEC 28. *Be it further enacted, etc.*, That all laws or parts of laws inconsistent with the provisions of this act be, and the same are hereby, repealed.

SEC. 29. *Be it further enacted, etc.*, That this act shall take effect from and after its passage.

JOHN M. SANDIGE,
Speaker of the House of Representatives.
ROBERT C. WICKLIFFE,
President of the Senate.

Approved March 15, 1855.

P. O. HEBERT,
Governor of the State of Louisiana.

A true copy:
ANDREW S. HERRON, Secretary of State.

The passage on the fifteenth of March, 1855, by the Senate and House of Representatives of Louisiana of "An act to establish quarantine for the protection of the State," marked a new era in the history of sanitation and quarantine in this State, and up to the present moment the great principles embodied in the twenty-nine sections of this act have not been withdrawn. Although some of its provisions have been modified, nevertheless a critical examination will show that such modifications have in many respects impaired rather than strengthened the force of the original act. Thus it has been shown in the annual report of the Board of Health for 1881 (pp. 112-118) that the abandonment of the minimum period of detention of ships from infected ports of ten full days, as ordained by the quarantine act of 1855, and the substitution therefor of the legislative act of 1876, was the direct means by which yellow fever was introduced in 1878.

If the epidemic of 1878 was due to imported pestilence, then said importation was directly and absolutely traceable to the abandonment of a definite period of detention of vessels at the Mississippi Quarantine Station.

The tariff of inspection fees under the act of 1855 was as follows: "It shall be the duty of the Resident Physician at the Mississippi Quarantine Station to visit every vessel coming from any port and entering the mouth of the Mississippi River. He shall require the captain of every vessel thus inspected to pay the following fees: For every ship, bark or seagoing steamer the sum of twenty dollars, and fifteen dollars for all other vessels."

In the supplementary act passed March 18, 1858, the fees established in section eight of the act of 1855 were thus modified:

"The Resident Physician shall require, for every certificate thus furnished, the following fees: Every sailing vessel of 1000 tons and over, shall pay thirty dollars ($30), every ship of 1000 tons or less, shall pay twenty dollars ($20); every bark shall pay fifteen dollars ($15); every brig shallpay ten dollars ($10); every schooner seven dollars and fifty cents ($7 50); every steamboat, towboats excepted, shall pay five dollars ($5); every steamship from Florida, Alabama, Mississippi and Texas, ten dollars ($10); every steamship from other ports shall pay twenty dollars ($20)."

The bill now before the General Assembly was designed to place all parties on a more equal footing and to remove certain objectionable terms relating to tonnage, and was the natural outgrowth of the complaints of the Maritime Association, which were laid before His Excellency Governor S. D. McEnery, at the extra session of the General Assembly.

In the bill to fix and regulate quarantine fees at the Mississippi Quarantine Station the fees have been modified so as to place ships and steamships on an equal footing, restore the charges on barks to the original figure in the act of 1855, and also permit of night inspection at the option of the master of the vessel and not upon the of the quarantine officer, upon the payment of double the amount charged for the day inspection.

The act of 1855 imposed a large tax on shipping for quarantine purposes, and under it a larger revenue was collected than has ever been received by the Board of Health since the American civil war, or than could be collected under the provisions of the present bill.

This statement will be conclusively demonstrated by the following record of the fees collected at the Mississippi Quarantine Station during three years preceding and thirteen years following the American civil war.

Fees collected by the Board of Health of the State of Louisiana at the various quarantine stations during a period of three years preceding the American civil war, 1869–81.

Year.	Quarantine Stations.		
	Mississippi.	Rigolets.	Atchafalaya
1857	$33,260	$445	$1,160
1858	33,403	707	210
1859	31,058	1,365	847

Fees collected by the Board of Health of the State of Louisiana at the various quarantine stations during a period of thirteen years following the American civil war, 1865-78:

	Mississippi.	Rigolets.	Atchafalaya
1869	$23,960	$3,557	$1,027
1870	21,012	2,947	950
1871	23,704	255	1,160
1872	18,903	817	1,950
1873	18,336	1,635	1,989
1874	19,280	445	277
1875	13,801	.....	.....
1876	19,347	674	40
1877	15,109	301	60
1878	19,931	93	.....
1879	18,114	178	22
1880	21,872	174	.....
1881	18,052	503	.....

From the preceding record of the receipts of the Board of Health from the various Quarantine Stations, it is evident that commerce was more heavily taxed and yielded a heavier revenue for the support of quarantine before the recent civil war than at any period following this national calamity.

During the years 1857, 1858 and 1859 the quarantine fees amounted to an annual average of $34,000, and this sum was cheerfully borne by those engaged in mercantile and commercial and maritime pursuits, whilst in 1882, when the fees amounted to but little more than one-half the sum, and in the face of two years' exemption from yellow fever, the men representing the commerce of New Orleans threaten to institute measures to defeat the collection of all quarantine fees.

In view of the preceding facts, it is evident that the object of these representatives of the shipping interests of New Orleans is to practically destroy the quarantine system of Louisiana.

The resistance to the quarantine system of Louisiana has been instigated and stimulated by the example of Charles Morgan, now represented by Charles A. Whitney & Co.

If these men succeed in their efforts, and accomplish their designs, the port of New Orleans will be practically sealed during the six months of each year, unless the General Assembly of Louisiana shall assume the entire expense of the quarantine system of the State.

In that event the absolute cost of maintaining the quarantine system would vary with the fluctuating value of State warrants.

In the present depressed and deranged condition of the finances of the State of Louisiana, it is difficult, if not impossible, to make any estimate of the probable cost to the taxpayers of Louisiana of maintaining an efficient quarantine.

Another point worthy of note is that owing to the substitution of steam for sailing vessels and the progressive increase in the size of vessels coming to this port, the quarantine fees will progressively diminish in number and the means of the board for the exclusion of foreign pestilence, etc., will consequently be curtailed.

This point will be illustrated by the following table, giving the arrivals of sea-going vessels and steamboats at the port of New Orleans each year—1847 to 1859 :

TABLE SHOWING ARRIVALS OF SEA-GOING VESSELS AT THE PORT OF NEW ORLEANS, EACH YEAR, 1847-1853—VESSELS FROM SEA.

Year.	Steamships.	Ships, Barks.	Brigs. Schrs.	Steamboats.
1847-48	206	1926	795	2977
1848-49	136	1597	456	2875
1849-50	147	1379	666	2784
1850-51	190	1250	704	2918
1851-52	213	1465	673	2778
1852-53	244	1524	596	3252
1853-54	204	1266	475	3076
1854-55	225	1166	426	2763
1855-56	234	1510	399	2956
1856-57	212	1281	441	2795
1857-58	247	1250	388	3264
1858-59	300	1289	409	3259

From this table there appears to have been a decrease in the arrivals of sea-going vessels of all classes, except steamships, in which a wholesome degree of progress was exhibited from 1857-1859. The decrease referred to, however, is only in number. The vessels coming to this port have been of a larger class from year to year, and the arrivals have exhibited a large increase in tonnage, as will be seen from the following table :

NUMBER AND CLASS OF VESSELS PASSING THE MISSISSIPPI QUARANTINE STATION, 1880–1881.

	Steamships.	Ships.	Barks.	Brigs.	Schrs.	Total
1880	614	121	356	39	141	1271
1881	589	106	262	35	141	1133

We thus observe a progressive decrease in the number of small vessels entering Mississippi River, whilst the actual tonnage increases within those limits determined the depth of water, and the size of the cotton, grain and sugar crops of the Valley of Mississippi.

The actual number of vessels entered at the United States Customhouse, in 1880, 1344, with a tonnage of 1,375,210; average tonnage 1023. In 1881, 1002 vessels, tonn 1,123,873, average 1121 tons.

Before the recent civil war the average tonnage of vessels entering the mouth of Mississippi River ranged from 374 to 873 tons, whilst in 1880 the average tonnage 1023.

Small and insignificant as the quarantine fees now are, they will, from these cau progressively decrease.

We have, in the last place, to examine the charge that the exaction of quarantine for the protection of the State and Valley from the importation of foreign pestilenc the sustentation of a proper system of quarantine, tends directly to cripple and des commerce.

The following table presents a view of the imports and exports of New Orleans du the present century, 1805-1860 :

IMPORTS AND EXPORTS OF NEW ORLEANS, 1805–1860.

YEAR.	Exports.	Imports.
1805	$3,371,545	.....
1806	3,887,323	.....
1807	4,320,555	.....
1808	1,261,101	.....
1809	541,924	.....
1810	1,890,652	.....
1811	2,659,050	.....
1812	1,060,471	.....
1813	1,045,153	.....
1814	387,191	.....
1815	5,102,610	.....
1816	5,602,948	.....
1817	9 024,812	.....
1818	12,924,309	.....
1819	9,768,753	.....
1820	7,596,151	.....
1821	7,272,172	$3,379,717
1822	7,978,645	3,817,238
1823	7,779,072	4 283,125
1824	7,928,820	4,539,769
1825	12,582,924	4,290,034
1826	10,284,380	8,165,521
1827	11,728,997	4,531,645
1828	11,947,400	6,217,881
1829	12,380,060	6,857,209
1830	15,488,692	7,599,083
1831	16,761,989	9,766,693
1832	16,530,930	8,871,653
1833	18.941,373	9,950,505
1834	26,527,554	13,781,809
1835	36.279,823	17,519,814
1836	39,179.818	15,117,649
1837	35,338,697	14,029,912
1838	31,502,248	9,496,808
1839	23,184,167	12,864,942
1840	35,136,936	10,677,190
1841	34,387,483	10,256,350
1842	28,404,149	8,033,591
*		
1850	38,105,350	10,760,499
1851	54,413,963	12,800,000
1852	48,326,913	12,800,000
1853	60,292,660	13,654,113
1854	60,932,130	14,402,050
1855	55,400,711	12,923,608
1856	80.447,963	17,183,327
1857	91,514,286	24,981,150
1858	88,382,438	19,586,013
1859	101,634 952	18,349,516
1860	108,393,567	20,920,849

From the preceding table it is evident that during the ten years extending from 1805 to 1815, inclusive, the increase of trade by no means corresponded with that of the population. On the contrary, a large falling off was exhibited even before the commencement of the war of 1812-15.

The close of the war, however, inaugurated a new era in the commercial history of New Orleans. The exports increased from $387,000 in 1814, to $12,918,000 in 1818.

This wonderful advance, however, was checked, and a large falling off was exhibited during the next six or seven years, although the average largely exceeded that of any previous period of ten years.

From 1820 up to the commencement of the civil war (1820 to 1860 inclusive) the increase of trade and population of New Orleans was remakable.

It is worthy of note that when the quarantine was established in 1855, the total exports were $55,400,711, and the imports $12,923,608, while four years after, in 1860, the exports reached $101,634,952, and the imports $18,349,516.

During the wonderful increase of the commerce of New Orleans, under the operations of the quarantine act of 1855, which embraced the essential conditions of the quarantine of this day, the revenue derived from quarantine was almost double that of any year following the American civil war.

The following table will show still further that the quarantine system of Louisiana, so far from being a burden upon commerce, has fostered and promoted it:

* From 1843 to 1849 inclusive, the exports of foreign and domestic merchandise averaged about $40,000,000 the average of the imports from foreign countries was barely $2,000,000.

TOTAL VALUE OF COMMODITIES EXPORTED AND IMPORTED AT NEW ORLEANS F
THE FOLLOWING PERIODS.

Year.	Exports.	Imports.
1870	$101,385,257	$17,705,659
1871	93,532,797	18,333,530
1872	95,950,942	30,000,377
1873	100,930,307	18,285,527
1874	87,974,797	13,472,483
1875	76,695,700	11,637,168
1876	81,387,836	9,634,263
1877	70,270,593	11,340,751
1878	74,366,388	8,725,751
1879	81,105,822	8,259,606
1880	102,528,366	11,800,977

From the preceding statistics it is evident that under the direction of the pres Board of Health the foreign commerce of New Orleans has been greater than at a period since the close of the civil war—1861-1865; and that, with the exception of year 1860, New Orleans actually enjoyed a larger commerce in 1880, during the action the present quarantine law, than in any other year from her foundation in 1718.

All the great sanitary and quarantine measures of the past twenty-seven years Louisiana may be directly or indirectly traced to the act "to establish quarantine for protection of the State," approved by P. O. Hebert, Governor of the State of Louisia on the fifteenth of March, 1855.

During the preceding 156 years of the existence of the colony and State of Louisia the sanitary and quarantine efforts by the State and people were spasmodic, unsatis tory and of short duration, and at frequent intervals the people were decimated foreign pestilence imported by maritime men and immigrants.

The exports of 1880 reached $102,528.376, and the imports $11,809,977; total exp and imports $114,338,353. The total amount collected from this vast sum for the tection of the commerce and trade of New Orleans and the Mississippi Valley $21,872.C an this paltry sum, barely sufficient to keep the quarantine establishme guarding some 500 miles of the coast, be regarded as a tax on commerce—a burden structive to the growing commerce of New Orleans? The internal or interstate trad New Orleans now exceeds, annually, two hundred million dollars; the preservati the trade depends absolutely upon an efficient quarantine guarding the approache the Mississippi Valley from the Gulf of Mexico. New Orleans will become a great nufacturing centre for cotton, tobacco, jute and sugar, provided pestilence is kept a by a rigid system of quarantine and by an equally rigid system of domestic sanitatio

If yellow fever is allowed to enter in May or June or July, the port will be hern cally sealed until the disappearance of yellow fever. During this period, which last as long as six months, there will be, practically, non-intercouse with surroun States, and all manufactories will be closed, as there will be no possibility of ship manufactured articles. No system of manufactures, however well ordered, can sus such periods of inactivity.

These facts relate solely to the mercantile and money view of this question. Ti when we further consider that during the years 1853, 1854 and 1855, New Orleans 12,780 of her citizens by yellow fever, an imported pestilence, and that only four y ago she lost 4056 souls, and about $15,000,000, by this same scourge, the necessity o most thorough and stringent legislation with reference to quarantine fees is clearly ceived.

The State of Louisiana has a right to demand that commerce, which benfits the n Valley, and derives its richest rewards from the cotton, sugar and grain of these Southern and Western States, shall pay a sufficient amount for such a system of in tion and disinfection and quarantine as will prevent the introduction of foreign lence.

With great respect, I have the honor to remain your obedient servant,

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana

The preceding letter was illustrated by statistics, giving the main facts and figur lating to the commercial history and progress of population in Louisiana.

GENERAL CONCLUSIONS.

1. The minimum length of quarantine detention should be definitely fixed by ment of the General Assembly of the State of Louisiana.

All nations and States, holding commercial relations with New Orleans, should have at all times a firm basis for calculation as to the *minimum period of quarantine detention* of ships from infected ports.

The important subject of minimum period of quarantine detention should not be left to the accident of political changes, or to the varying powers and influence of commerce, or to the changing caprice of popular opinion, prejudice or fear.

In the immediate presence of pestilence the people are timid, and prone to demand the unreasonable and even barbarous measures dictated by abject fear and absolute devotion to self-preservation, and it has been too often the case that the most liberal, enlightened and fearless of the medical profession have been powerless either to control, direct or breast the storm of popular terror, indignation, prejudice and abuse.

2. The minimum period of quarantine detention of vessels from infected ports, at the mouth of the Mississippi River, should not be less than ten (10) days.

If under such a restriction commerce with ports infected with yellow fever is impossible, then let the commerce perish, in order that the health and lives of the people of Louisiana may be preserved and the safety of the surrounding States assured.

3. Quarantine in Louisiana has failed in excluding foreign pestilence on the one hand, and in establishing confidence in the health authorities of surrounding States on the other hand, because it has been uniformily opposed by the commercial interests, and condemned by members of the medical profession, who have generally been supposed to be competent to judge of such questions.

The system of quarantine so wisely inaugurated in 1855 has been subject to violent and unreasonable changes, and has been made to suit the changing opinions of the so-called people, as developed in the fierce conflict between private gain and public health. No system of quarantine has been subjected to more violent and sudden changes or to more empirical treatment. Upon the experiments of a few years, those placed at the head of commercial and sanitary affairs jumped to unwarranted conclusions and risked the lives of the people upon the results of crude and illy-devised experiments:

These propositions will be sustained by the following facts:

(a) The act of 1855, "To establish quarantine for the protection of the State," absolutely compelled the Board of Health to fix the number of days of quarantine for vessels liable to it, "not to be less than ten days." See sections 6, 9 and 13.

The minimum period of quarantine detention of ten (10) days is again enunciated in section 3 of the supplementary act, approved March 18, 1858; but we find an important and, in the light of history, a fatal change in the entire system of quarantine detention, which rapidly developed the abundant harvest of disease and death.

Section 3 of the act of 1858 provides: "That all vessels in a foul condition, or vessels whose crews or passengers are suffering or have suffered while on the voyage from contagious, pestilential or infectious diseases, shall be detained by the Resident Physician at the Quarantine Station such time, not less than ten days, as may be deemed by him necessary."

Section four of the act of 1858 provides: "That in case of emergency the Board of Health shall have power to issue proclamation of quarantine without reference to the Governor, and to enact all needful regulations for the enforcement of the same."

An important and, as the events of 1858 show, a fatal modification was made in section five, as follows:

"That vessels *out ten days, presenting clean bills of health, not having, nor having had, sickness on board, and which are not in foul condition, shall be permitted to pass to the city* after thorough fumigation by disinfecting agents; to effect which purpose the Resident Physician shall detain said vessel as long as he may deem necessary."

In 1855, New Orleans lost 2670 of her citizens by yellow fever, while in 1856 she lost only 74, and in 1857 199, by the same disease.

The short experience of two years (1856 and 1857) of comparative immunity from yellow fever, appears to have given power to the opponents of quarantine, and served to obliterate the terrible scenes of 1853, 1854 and 1855, and led the Legislature of Louisiana to enact the important and fatal modification of counting the ten days of detention not from the quarantine stations, but from the point of departure to the port of New Orleans.

It is well known that the period of comparative exemption from yellow fever in 1856 and 1857 was immediately followed by the epidemic of 1858, which, in the history of New Orleans, ranks second only to 1853 in severity, and claimed 4855 victims.

A period of eight years followed of comparative exemption from yellow fever, the deaths being as follows: 1859. 92; 1860, 15; 1861, 0; 1862, 2; 1863, 2; 1864, 6; 1865, 1; 1866, 185.

During four of these years (1860-65) the city of New Orleans was excluded from active participation in foreign commerce by the existence and disastrous fortunes of the great American civil war. Cholera, however, appeared in 1866, and continued through 1867, exceeding in its influence as the yellow fever advanced, and again exciting alarm by the number of its victims as the yellow fever subsided, 234 deaths from cholera being reported in November, and 210 deaths in December.

In 1867 yellow fever appeared in June, and before the end of the year destroyed 3 of the citizens of New Orleans.

The Quarantine act of 1870 was important, in that it conferred upon the Board Health the "power to appoint Sanitary Inspectors" in the District of New Orleans in the City and Parish of Jefferson, "in lieu of the four health officers now appointed the Council of New Orleans;" and we find, also, that in accordance with sections and thirteen, of the act of 1855, the number of days of quarantine of vessels liable was fixed, "not to be less than ten days." It appears, however, that practically period from port to port was counted in the ten days.

b. The empirical use of carbolic acid for the arrest of the spread of yellow feve New Orleans led to most important modifications in the quarantine system of Louisi and to such modifications may be traced the wide-spread and fatal epidemic of 187 well as the epidemics of 1873 in Memphis and Shreveport.

Carbolic acid appears to have been first used for the "arrest of yellow fever" "disinfectant" during the memorable epidemic of 1867, under the direction of S Smith, M. D,, President of the Board of Health. Yellow fever appeared in June. first case died in the Charity Hospital on the tenth of this month.

Dr. Smith states that "*Every house where a case was reported as having occurred was, u the direction of the health officers, cleansed and fumigated with sulphurous acid gas and car acid. The premises, likewise, were subjected to the provisions of the health ordinance, an privies purified with the sulphate of iron.*"

Dr. Smith held that "The slow development of the cause of the fever, its appa temporary suspension in particular localities, the exceeding mild character of the ease, leads to the hope that it may be kept in check, if not entirely eradicated, i first cases, by the prompt application of disinfectants."

At this time Professor E. S. Lewis, Health Officer of the Third District, expressed self as in favor of the carbolic acid disinfection for the arrest of yellow fever. Prof Lewis says: "The number of houses disinfected of yellow fever from the midd August to November 1 was about 300. These houses were not only fumigated and fected with sulphate of iron, in solution, but were pumped from top to bottom wit bolic acid, which impregnated the atmosphere for some distance off. This was rep as often as new cases occurred."

Notwithstanding these measures the disease became epidemic. An immense nu of cases occurred, and 3107 deaths were reported as directly caused by yellow fev addition to 990 deaths caused by the various forms of paroxysmal and continued fev

With the overthrow of the Democratic party by the action of the so-called recon tion acts, and with the installment of the Republican party, the sanitary affairs into the hands of Dr. C. B. White, late Sanitary Director of the New Orleans iary Association.

In 1869 only three deaths were recorded as due to yellow fever.

During the summer and autumn of 1870 the deaths from yellow fever, as report the Board of Health, numbered 587; but it is worthy of note that other forms of chiefly malarial fever, caused 591 deaths; total from fevers in 1870, 1178; of this ber 211 were recorded as due to pernicious and congestive fevers. The lavish use bolic acid by the Board of Health for the "arrest of yellow fever" is well known, a total sums of money expended have been before recorded. According to the pub statement of the President, all cases that came to the knowledge of the Board of were treated by the free use of such disinfectants as chlorine, sulphurous acid, ca acid and lime.

The monthly mortality by yellow fever was as follows: August, 3; September October, 242; November, 106; December, 5; total, 587. In other words, yellow followed its usual course of rise and decline, and the heaviest mortality occurred month of October, after the thorough installation of the *carbolic acid disinfection.*

In 1871 the cases of yellow fever reported were 114 and the deaths 54; the disea chiefly confined to the Fourth District, but sporadic cases occurred in other port the city, as in numberless other years, in this and other Southern cities, in which carbolic acid nor any other disinfectants were used. In 1871 the disease was stil limited, only 83 cases and 39 deaths having been officially reported.

In 1873 the first case of yellow fever occurred on board the Spanish bark Valpar

According to the statement of Dr. C. B. White, President of the Board of H "This bark left Havana June 15, in ballast, and arrived at quarantine, on the Miss River, June 14, and was detained there two days, after which she was released a mitted to come to the city, arriving June 26." The mate, Arua, was taken sic yellow fever on the fourth of July. It is evident, therefore, that if this bark ha held at the Mississippi Quarantine Station for ten full days, according to the Louisiana, not only would New Orleans have escaped the fever, but Mempl Shreveport would have, in all probability, escaped the terrible epidemic of 1873.

388 cases and 226 deaths the monthly record was as follows: July, 8 cases, 3 August, 40 cases, 19 deaths; October, 135 cases, 79 deaths: November. 22 ca

deaths. Yellow fever followed its usual course, increasing up to a certain period, and then declining with the fall of temperature, and ceasing with the appearance of frost. No connection between the decline and cessation of this disease and the vast amounts of carbolic acid used for purposes of "disinfection" could be traced.

In 1874 Dr. Alfred Perry instituted what he called a new plan of disinfection at the Mississippi Quarantine Station, from June 16 to October 31, and affirmed that "this disinfection was more complete than has ever before been performed anywhere in the world." The essential portion of this system of disinfection consisted in forcing the sulphurous acid gas, resulting from the burning of sulphur in an iron furnace, down the hold of ships by means of a wind blast or blower. Dr. Perry held that whilst in 1871 yellow fever was imported into New Orleans through the quarantine by the brig Hope, and in 1872 by the steamship Havana, and in 1873 by the bark Valparaiso, that no yellow fever came through the quarantine during this period of service (June 23 to October 13), although it was brought in by the bark Queenstown, October 16, after his disinfection had ceased.

The results of the experiments of Dr. Perry were received as conclusive by the President of the Board of Health, by the Chamber of Commerce, and by a considerable portion of the Medical Profession, and the Legislature was petitioned to abolish the specific period of detention.

The Hon. G. W. R. Bayley read an elaborate defense of the system of disinfection practiced by the Board of Health, and thus defines the theory upon which the Board of Health acted:

"The theory that yellow fever is propagated by germs from infected centres, along surfaces in all directions, and that it is not conveyed in the atmosphere otherwise, seems best to explain its phenomena. The disease is local and must be destroyed, and its spread prevented by local remedies. Carbolic or phenic acids '*kill in loco* parasites (or germs) of both systems'—animal or vegetable—as announced by Professor Gritzier, of Paris, in 1874.

"The New Orleans Board of Health have since, and including 1870, acted upon this knowledge—only recently discovered elsewhere—and applied carbolic acid to germ-infected surfaces, and to surfaces surrounding infected centres or surfaces, for the purpose of destroying and preventing the multiplication and dissemination of yellow fever disease germs, and knowing that it would '*kill in loco*' all germs, whether animal or vegetable, with which it came in contact, and that none of them could cross such a disinfected surface."

The President of the Board of Health, Dr C. B. White, in his Annual Report of 1875, says:

"The paper of Hon. Mr. Bayley, of this Board, read before the Chamber of Commerce of this city, and the resolutions adopted by that body are of special interest, as both, based upon the supposed advances in theory, method and results of disinfection will be brought before the Legislature to essentially modify the definite time—detention feature of existing quarantine laws."—Annual Report, 1875, p. 15.

RESOLUTIONS OF THE CHAMBER OF COMMERCE.

"*Resolved, by the Chamber of Commerce of New Orleans*, That the system of disinfection to prevent the propagation and spread of infectious diseases in our city, practiced with so much apparent success since 1870, should be continued and encouraged by the State authorities; also, that the efforts of the Board of Health to prevent epidemics are approved and commended."

* * * * * * * * * * *

"*Be it furthur Resolved*, That this Chamber recommends to the present Legislature to grant authority to the Board of Health to permit, at its discretion, the passage of vessels from infected ports to the city, after the same have been satisfactorily and thoroughly fumigated and disinfected, in lieu of the prescribed time-detention called for by the existing quarantine law."

The following petition to the Board of Health, in regard to quarantine, is a remarkable document, and was published in the New Orleans Medical and Surgical Journal (new series), vol. 2, 1874-5, pp. 960-964:

NEW ORLEANS, April 26, 1875.

To the President and Members of the Board of Health of the City of New Orleans:

Gentlemen—The undersigned, practicing physicians of the city of New Orleans, beg leave to submit:

1. That after many years of experiment, it has been clearly proven that quarantine does not protect this city from yellow fever.

2. That the commerce of this city upon which her prosperity and the livelihood of more than half of her population, directly or indirectly depend, must continue to be most seriously damaged by the repetition of said quarantine.

In view of these facts, we pray your honorable body not to recommend in future the imposition of any greater restriction upon vessels arrived from infected ports than to require them to be disinfected at the quarantine stations, and to remove to hospital at the same points any cases of yellow fever which may exist on board; the detention for this purpose not to exceed *twenty-four hours*, and unaffected passengers, in the meantime, allowed to proceed to the city.

(Signed)

T. Alpuente, D. M. P., 142 Royal street.
A. Foster Axson, M. D., 178 Annunciation street.
E. B. Beach, M. D., 16 Claiborne street.
C. Beard, M. D., 14 Dauphine street.
S. M. Bemiss, M. D., 558 St. Charles street.
Henry Bezou, M. D., 144 Dumaine street.
C. J. Bickham, M. D., 710 Magazine street.
W. P. Brown, M. D., 603 St. Charles street.
J. Borde, D. M. P., 130 Customhouse street.
D. Warren Brickell, M. D., 14 Dauphine street.
J. N. Folwell, M. D., 221 Carondelet street.
Edward Harrison, M. D., 112 Canal street.
Alexander Hart, M. D., 19 Camp street.
F. Hawthorn, M. D., University Building.
D. C. Holliday, M. D., 112 Camp street.
A. C. Holt, M. D., 242 Felicity street.
O. Howard, D. M. P., 117 Royal street.
Wm. E. Kennedy, M. D., 168 Julia street.
T. S. Kennedy, M. D., 168 Julia street.
P. A. Lambert, D. M. P., 117 Royal street.

A. Capdeville D. M. P., 449 St. Charles street.
J. Carter, M. D., 694 Magazine street.
John J. Castellanos, M. D., 72 Orleans street
S. E. Chaillé, M. D., University Building.
Alcée Chastant, M. D., 485 Magazine street.
H. C. d'Aquin, D. M. P., 41 North Rampart street.
John Dell'Orto, D. M. P., 243 Julia street.
J. P. Davidson, M. D., 242 Prytania street.
D. H. Dennis, M. D., 245 Baronne street.
E. DeBlanc, M. D., 159 Dumaine street.
C. Faget, D. M. P., 159 Burgundy street.
J. A. C. Fisher, M. D., 168 Felicity street.
H. D. Schmidt, M. D., 90 North Rampart street.
B. Scratchley, D. M. P., 377 Dryades street.
E. T. Shepard, M. D., 1140 Magazine street.
E. Souchon, M. D., University Building.
Benjamin Stillé, M. D., 204 Prytania street.
C. H. Tebault, M. D., 469 Baronne street.
J. Trudeau, M. D., 132 South Rampart street.
Charles Turpin, D. M. P., 41 North Rampart street.
J. H. Wiendall, M. D., 304 Bayou road.
S. S. Wood, M. D., 768 Magazine street.
Thomas Layton, D. M. P., 702 Magazine street.
J. Hampden Lewis, D. M. P., 289 Royal street.
E. S. Lewis, M. D., 70 Frenchmen street.
F. Loeber, M. D., 161 Baronne street.
Samuel Logan, M. D., University Building.
J. J. Lyons, M. D., 219 Carondelet street.
Sabin Martin, D. M. P., 96 Burgundy street.
Armand Mercier, D. M. P., 220 Girod street.
W. S. Mitchell, M. D., 10 Carondelet street.
T. J. Moreau, M. D., 118 Marais street
T. G. Richardson, M. D., University Building.
P. Yeiser, M. D., Louisiana avenue.
M. Schuppert, M. E., 179 Carondelet street.
J. F. Siguer, M. D., 82 Carondelet street.
Howard Smith, M. D., 91 Prytania street.
J. C. Stickney, M. D., 168 Orange street.
F. L. Taney, M. D., 377 Dryades street.
J. Touartre, D. M. P., 142 Dumaine street.
D. Tureaud, M. D., 132 South Rampart street.
W. D. Watkins, M. D., Rousseau street.
W. B. Wood, M. D., 768 Magazine street.

The New Orleans Medical and Surgical Journal, edited by S. M. Bemiss, M. D., Vol. II, New Seri 1874-5. May, 1875, pp. 960-962.

The editor of the New Orleans Medical and Surgical Journal not only published t petition to the Board of Health in regard to quarantine, "in order to exhibit the sen ment of a large number of our leading physicians in respect to the true value of quara tine," but strongly indorsed the same by his signature and by a special editorial, fr which we extract the following:

"As an illustration of the drift of medical opinion, it is a movement which cannot be too highly estimat Whatever of wisdom—whatever of actual benefit to man in a sanitary point of view may have been accord to the practice of quarantine in former days, we are forced to admit its entire infeasibility and impracti bility at the present time. The folly exhibited by attempts to blockade the great natural highway of c merce, which the Mississippi river affords, and yet permitting unrestricted ingress of persons and fami by the general railways which centre here, is too apparent to require discussion. * * *

Recognizing these truths, the medical profession desire to do away with restrictions on commerce wh render no compensation in the way of protection against disease. What other means of protection do propose to substitute? Surely nothing promises such good results as those measures which are practi under the term 'disinfection.' * * * *

"The good results ascribable to the use of disinfectants point to this method as the proper substitute quarantine.

"The medical profession of this city includes a member whose experience, accurate chemical kno edge, great zeal and ingenuity in the application of means, qualify him most admirably for attaining best results possible to be reached by disinfection. I refer to the gentleman who during the last year himself so much credit in this kind of service. If an epidemic seems imminent on account of threate approach of yellow fever, his employment, with a *carte blanche* as to the means to be used, would affo satisfactory test of the amount of benefit to be obtained by disinfection.

"The quarantine laws of Louisiana demand revision and alteration. It is strikingly absurd to atte to settle by legal enactments questions which are still *sub judice* at the bar of science. This absur must be charged against any statute which expressly provides that members constituting a scientific c mission shall hold to one or another opinion in regard to unsettled questions connected with their dut The explanation of this curious feature in the statute must be found in the fact that it was passed sho after the great epidemic of 1858, when people were bewildered in regard to the best mode of securing exe tion from such fearful plague. In the matter of fixing the duration of detention at quarantine they" members of the Board of Health) "possess some powers, but the law explicitly states the *period* shall be less than ten days"—[New Orleans Medical and Surgical Journal, edited by S. M. Bemiss, M. D. II, N. S., pp. 960-962.

4. The combined efforts of the Board of Health, the Chamber of Commerce and *large number of our leading physicians*," led to the enactment of the following law, which the great scientific fact that the poisons of specific diseases act in accordance w definite laws, and after introduction into the system require a certain period (perio *incubation*) for the manifestation of their characteristic and recognizable phenomena ignored. Small-pox has its period of incubation as well as the vaccine virus, yellow fever most generally manifests itself within from two to nine days after expo to its cause.

The framers of the Quarantine Act of 1855 were, therefore, wanting neither in scie nor experience, but recognized a well-known law of disease, and wisely framed their dinance for the protection of the State of Louisiana and the Valley of the Mississi from foreign pestilence, by including as an essential element of quarantine, a perio minimum detention of ten days at Quarantine Station.

The advanced Sanitarians and Legislators of Louisiana, in 1876, condemned t "obsolete and absurd notions," developed by the careful observations of such men as R and Jenner, and upon the results of five years' experimentation with carbolic acid, a little less than five months' trial with a "new process of disinfection" at the Mi sippi Quarantine Station, substituted the following:

AN ACT to authorize and empower the Board of Health of the State of Louisiana to detain and disin and to pass after disinfection, vessels from infected ports, and from Quarantine Station, in lieu time of quarantine detention, in certain cases, and to repeal conflicting laws.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the State of Louisiana, in G Assembly convened*, That the Board of Health of the State of Louisiana be and is hereby authorize

empowered, at its discretion at any time, to cause the detention at quarantine stations, for purposes of disinfection and fumigation, and to disinfect, fumigate and purify any and all vessels from ports in which yellow fever usually prevails, or from ports where other contagious or infectious diseases are reported to exist; and after such disinfection, fumigation and purification at quarantine, to permit the passage to the city of New Orleans of such vessel or vessels, without any prescribed time of detention, when it is satisfied that the same have been properly and sufficiently disinfected and purified, so that said vessel or vessels may safely be permitted to pass without damage to the public health or risk of contagion.

SEC. 3. *Be it further enacted, etc.*, That all laws or parts of laws conflicting with this act, be and the same are so far as respects the operation of this act, hereby repealed, and that this act shall take effect from and after its passage.

(Signed) E. D. ESTILETTE,
Speaker of the House of Representatives.

(Signed) C. C. ANTOINE,
Lieutenant Governor and President of the Senate.

Approved March 24, 1876. WILLIAM P. KELLOGG,
Governor of the State of Louisiana.

A true copy:
P. G. DESLONDE, Secretary of State.

Such measures prepared the way for the great epidemic of 1878.

5. The yellow fever epidemic of 1878 in New Orleans and in the Mississippi Valley was traceable to the introduction of the disease through the Mississippi Quarantine Station, in consequence of the substitution of so-called "disinfection" for the minimum period of detention of not less than ten days.

The late Dr. Samuel Choppin, in his report to His Excellency, Frances T. Nicholls, Governor of the State of Louisiana, said:

"The Board of Health accepts the theory that yellow fever is a zymotic disease, contagious in its nature by the multiplication of its germs, the infecting distance of which is at first short; that it travels on surfaces, and, like the orange, the banana and the sugar cane, is exotic, its cradle being the Antilles. * * *

"The experience of 1877 affords valuable teachings in the absence of our wonted scourge. First, it testifies that yellow fever may be entirely destroyed here by the frost of an unusually vigorous winter, from which it follows that this is not an original habitat of the infection. Secondly, it testifies the utility of a suitable quarantine system. Thirdly, it testifies that, by the combined action of frost, quarantine and disinfection when required, we may reasonably hope to keep the mastery over this pestilence, which has made our city a dread to its inhabitants, and an abhorrence to strangers, at incalculable cost to its commercial prosperity. * * *

"The advantage of a system of quarantine, with the omission of the objectionable feature of detention, and reliance on inspection and disinfection, was so strongly commended to the Legislature in 1876 as to obtain its legal sanction, and the experience of two years justifies our confidence in its efficiency. Vessels arriving from infected ports have been subjected to fumigation by sulphur and the disinfection of the bilges by carbolic acid, while the personal baggage and beds of their crews and passengers have been treated with dilute carbolic acid. This has been continued from the issuance of the Governar's proclamation at the Mississippi Quarantine from June 15 to November 15, 1877, and at the Rigolets and Atchafalaya from June 15 to November 15."—[Annual Report of the Board of Health of the State of Louisiana to the General Assembly for the year 1877, pp. 13–15.

The origin of the fearful epidemic of 1878, which swept up the great Valley, embracing in its deadly coils a space of country extending from New Orleans, on the Gulf of Mexico, to Chattanooga on the East and St. Louis on the Northwest, was thus detailed by Dr. Choppin, in his Report to His Excellency, Francis T. Nicholls, Governor of the State of Louisiana, on January 1, 1879.

Dr. Samuel Choppin says:

"It would be well here to give the early history of the recent outbreak, and what we regard as the most probable explanation of its occurrence.

"On the twenty-second of May the sanitary condition of New Orleans was as good as it generally is at that season of the year. Malarial fevers were not more prevalent than usual, and there was not a single case of yellow fever in New Orleans. On the morning of that day the steamship Emily B. Souder arrived and was moored at the foot of Calliope street.

"The first cases of yellow fever at New Orleans in 1878, undoubtedly, were two of the officers of the above steamship, namely: Clark, the purser, and Elliott, one of the engineers. Clark was ill when the vessel reached the quarantine, but managed to pass inspection as suffering merely from neuralgia. Quite lately it has transpired, through the inquiries of the Yellow Fever Commission, that he boasted, after arrival in New Orleans, that he had 'beaten the quarantine doctor.' Be that as it may, he went ashore sick on the morning of May 23, and two days after he died, with symptoms which belong unmistakably to yellow fever, at a house on Claiborne street, near Conti. * * *

"Elliott sickened after his arrival, and was attended by a private physician at his boarding house, corner of Front and Girod streets, until the evening before his death, without apparently a suspicion on the part of any one that he had yellow fever. Late in the evening of May 29 he was removed to Hotel Dieu, where he died within a few hours. A careful *post mortem* examination was made by two competent physicians, and the body was subsequently inspected by myself. No one of us three doubted the nature of the disease.

"Here it is proper to observe that the only case of yellow fever in New Orleans in 1877 came through the quarantine by practicing deception on the Resident Physician. This man, a passenger on a British steamer, took passage at Havana and sickened before arrival at quarantine. However, he was able to go on deck, and passed inspection while sitting with a newspaper in his hand. Fortunately, on reaching the city, he fell into the hands of a physician who promptly reported his case as yellow fever to the Board of Health, and vigorous means were at once adopted to arrest the infection. No infection had survived the vigorous winter of 1877–8; no further harm resulted from the single case of 1877, and it is fair to presume that no trace of the fever existed here previous to May 22.

"In 1878 the cases from the Emily B Souder were unknown to the health authorities for a full week after the arrival of the ship at her wharf, at the head of Calliope street. No further time was lost in making all of the usual means of disinfection, around the intersections of Front and Girod streets, in and around Hotel Dieu, where Elliott died, and in and around the house where Clark died, on Claiborne street. No more cases followed within the period of their apprehended occurrence, and it was supposed the danger was passed. About the middle of July some cases of a strongly suspicious character came to light on Constance street,

near its intersection with Terpsichore, and in a few days all doubt was removed as to their nature. Abo the seventh of July a young man by the name of Cohn came to the Touro Infirmary from Gasquet stre between Villere and Marais, presenting strong appearances of yellow fever, but he recovered before atte tion was drawn to Constance street, and his case was considered questionable."

It is not material to the great principle which we wish to establish and enfor namely: *that quarantine based merely upon disinfection without a sufficient period of detenti for observation is a delusion and a sham*, that we should enter into the discussion of t relations of the epidemic of 1878, to the cases of Clark and Elliott, imported by t Emily B. Souder, in the month of May (I have elsewhere fully and decidedly expres my opinion upon this question), but I desire to bring further proof that if the Emily Souder did not import pestilence in May, she did import yellow fever in the early part July, 1878.

The quarantine physicians at the Mississippi Quarantine Station during the even just recorded, and those now to be noted, were, in accordance with the appointment His Excellency Francis T. Nicholls, Dr. P. S. Carrington, Resident Physician, a Dr. G. Farrar Patton, Assistant Resident Physician, at the Mississippi Quaranti Station.

Dr. P. S. Carrington and Dr. G. Farrar Patton served at the Mississippi Quaranti Station from about December 1. 1877, to May 21, 1880.

This period embraces the great epidemic of 1878, during which the yellow fever w introduced through this station into the Mississippi Valley by the steamship Emily Souder.

Whatever doubt may have existed as to the spread of yellow fever from the t cases imported by the Emily B. Souder in May, 1878, no doubt can be had as to accuracy of the reports to the St. Louis Medical Society on the yellow fever of 18 which shows that W. P. O'Bannon contracted yellow fever from cases concealed on t ship, about the fourth of July, 1878, and died with all the symptoms of yellow fever, St. Louis, on the nineteenth of July, 1878.

Dr. A. P. Lankford gives the following information with reference to the case of P. O'Bannon, very probably one of the first cases in the United States, and the first second case in Missouri, and reared in St. Louis, left this city on the steamer Co mm wealth, for New Orleans, Capt. Shields, his uncle, in command, late in June, 1878, ho ing the position of assistant second clerk:

"O'Bannon lived on board the Commonwealth, and while at New Orleans, about the third or fourt July, went on board the Emily B. Souder, then lying at the levee, notwithstanding the prohibition of his u against his going on board any such vessel. The Souder had lately arrived from the West Indies, wit cargo of sugar, and at the time of O'Bannon's visit had two cases of yellow fever on board. which had parently escaped the vigilance of the authorities.

"It is probable, however, that O'Bannon came into contact with these cases. The Commonwealth close to the Souder at the time, and transferred to her deck from the steamship 500 hogsheads of suga the Belcher Refining Company, in St. Louis. It is not known that O'Bannon went into the hold of Souder during the process of transfer, nor is it probable that he did so, as his duty as clerk requ his presence on the deck of the Commonwealth. From the time of the transfer until the twelfth of J involving the entire period of the return trip of the Commonwealth to St. Louis, young O'Bannon who only 16 years of age, was romping and playing among the hogsheads of sugar, which were on the deck of the Commonwealth, with his sister and cousin, neither of whom were subsequently affected. arrived in St. Louis on the night of Thursday, July 11, 1878, and seemed perfectly well on the Sunday lowing, being seen on that day by Dr. Langford, on a visit to the family. The next day (Monday) he plained of inappetence, and of slight chilly sensations. About 5 p. m. he was found by his mother, aft somewhat prolonged search, under the piano in the parlor, in high fever and profound sleep, from whi was very difficult to arouse him.

"Dr. Lankford being called, saw him at 1 p. m. on July 16. The stupor continued, and the fever di abate; the tongue was inclined to be dry, and the skin devoid of moisture. The bowels had been c pated, urine scanty and high colored. There was, as yet, no nervous irritability of the stomach, but thirst. These symptoms increased in intensity, the patient became delirious during the night, and the was observed to be of a continuous character. Some irritability of the stomach had now appeared. At sultation with Dr. J. R. Baudury next day (Thursday), the fever was noted as still continuous. Ther frequent vomiting, and about 8 p. m. ejection of unmistakable black vomit, which had begun some hours previously. The dejections also were very dark. There was no very marked icterus until the ing after this, when suppression of urine was also determined. The patient died on Friday, the ninet of July, 1878, at about 1 p. m., the fifth day of his disease.

"At this date there was no declared yellow fever in the United States, except the cases on boar Emily B. Souder; none as yet reported in New Orleans or elsewhere. At the consultation on the eight of July the case was declared to be one of yellow fever, and the diagnosis was thoroughly verified at th topsy. Drs. Lankford, Baudury and P. G. Robinson being present. (See statements of Drs. Baudur Robinson).

"Dr. Lankford has seen many cases of intermittent fever this past year. He regards these fevers a ing been exceedingly obstinate, requiring the persistent administration of large and frequent doses o nine and arsenic to overcome them and prevent recurrence. An unusually high temperature, and a di tion to assume a remittent character was common.

"Dr. J. R. Baudury saw young O'Bannon, in consultation with Dr. A. P. Lankford, on the third d the disease (seventeenth of July). The characteristic symptoms were stupor, almost simulating coma; were no convulsions until the morning of the day he died; there was much gastric irritability, with ej of glaizy matter at first, but the next day black vomit was thrown up; the icterous was not marked life, except on the last day. The patient complained of intolerable pain in the head, when the stupor ted occasionally. Towards the end the vomiting was very profuse; there was great jactitation an sultus, and some convulsions. A blister which had been applied to the nape of the neck became gangr after a few hours. The case, in Dr. Baudury's opinion, was indisputably one of typical yellow fever.

"Dr. Baudury saw many cases of malarial fever this past year, and regards them as having been unusually severe, difficult to manage and strongly disposed toward recurrence.

"Dr. P. G. Robinson, 1523 Olive street, was present at the autopsy of the youth O'Bannon. The patient had all the characteristic symptoms of yellow fever, vomiting black vomit, which was found abundantly in the stomach and intestines after death. The skin was intensely yellow. This occurred a few days after the patient's return from New Orleans, where, as elsewhere detailed, he had gone on board an infected vessel. From the facts observed on autopsy Dr. Robinson affirmed positively that the case was one of yellow fever. This occurred early in the season, before there was any report of the prevalence of yellow fever in New Orleans.

Reports to the St. Louis Medical Society on Yellow Fever, containing the Report of the Committee appointed to Inquire into the Relations of the Epidemic of 1878 to the City of St. Louis, etc. St. Louis: Geo. O. Rumbold & Co., 1879. Pp. 16, 17-34.

6. In view of the preceding facts, it is but reasonable to conclude that if a definite period of detention for vessels from infected ports had been enforced by the Board of Health at the Mississippi Quarantine Station during the months of May, June and July, cases of yellow fever would not have passed that Quarantine Station unobserved.

If the epidemic of 1878 was due to imported pestilence, then said importation is directly and absolutely traceable to the abandonment of a definite period of minimum detention at the Mississippi Quarantine Station.

The abandonment of the minimum period of quarantine detention, and the substitution instead thereof of "disinfection by the legislative acts of 1876, was the direct result of the recommendations of the Board of Health, the Chamber of Commerce and certain leading physicians of New Orleans.'"

Immediately after the epidemic of 1878, in recording my experience, I said: "One great defect in the Mississippi quarantine system is that there are no arrangements for breaking the bulk of the cargo, and no thorough fumigation of vessels infected with yellow fever can take place unless the bulk is broken. The mere burning of sulphur in pans, or the injection of the fumes, is not sufficient to thoroughly disinfect the vessel.

"Quarantine should not only command all the outlets and inlets to New Orleans, but all vessels from infected ports should either be excluded, or else the cargoes should be landed at the Quarantine Station, and should be thoroughly fumigated and then transferred to lighters to be transmitted to the city. * * * Vessels trading with Southern ports liable to be affected with yellow fever should be constantly under sanitary police. A medical officer should accompany the vessel and superintend the crew in the infected ports, and disinfect the vessel in port and upon the voyage, and see that every prominent sanitary measure be instituted. An imperfect quarantine, such as now exists at the inlets of the Mississippi, has been, and will be, a sham and a delusion. The question as to the foreign or domestic origin of yellow fever should be determined by an absolute quarantine."

Yellow fever Epidemic of 1878 in New Orleans, by Joseph Jones, M. D. New Orleans Medical and Surgical Journal, February, 1879, p. 616.)

7. Holding the opinions just quoted with reference to the yellow fever epidemic of 1878, and with reference to the necessity of a fixed period of quarantine detention, after my election as President in April, 1880, I urged upon the Board of Health and His Excellency Governor Louis A. Wiltz the importance of conforming to that portion of the Quarantine Act of 1855, that vessels coming from ports where pestilential, contagious or infectious diseases were prevailing, should be subjected to a detention at the Quarantine Stations of not less than ten (10) days.

The exact language which I held was this: "All vessels from any place where disease subject to quarantine (pestilential, contagious or infectious diseases) existed at the time of their departure, or which shall have arrived at any such place and proceeded thence to New Orleans, or on board of which during the voyage any case of such disease shall have occurred, arriving between the first day of May and the first day of November, shall remain at quarantine not less than ten days, and shall perform such and further quarantine as the Quarantine Physician and the Board of Health may prescribe; unless the Quarantine Physician with the approval of the Board of Health, shall sooner grant a permit for said vessel or cargo, or both to proceed."

The Board of Health, however, declined to recommend any specific period of quarantine detention, and the Governor accordingly issued the following proclamation:

STATE OF LOUISIANA, EXECUTIVE DEPARTMENT.

Whereas, Section 3640 of the Revised Statutes of the State of Louisiana, approved March 14, 1870, provides that the Governor shall issue his proclamation, upon the advice of the Board of Health, declaring any place where there shall be reason to believe a pestilential, contagious or infectious disease exists, to be an infected place, stating the number of days a quarantine is to be performed by the vessels, their passengers, officers and crews, coming from such place or places.

Now, therefore, in pursuance of the provisions of the statute aforesaid and on the recommendation of the Board of Health, I, Louis A. Wiltz, Governor of Louisiana, have thought proper to issue this my proclamation, declaring that vessels arriving from and after the tenth day of May, 1880, from the following ports known to be infected with yellow fever, viz: Vera Cruz and Rio de Janiero, and the officers, crews, passengers and cargoes arriving from the above named places, or having touched or stopped at any of them, shall be subject to such detention and quarantine as the Board of Health may direct.

And I do hereby direct the proper officers at the Quarantine Station to rigidly enforce the execution of this proclamation, and any violation of the laws of this State on this subject matter to be vigorously prosecuted,

In testimony whereof I have hereunto set my hand and caused the seal of the State to be affixed, at the city of New Orleans, this fourth day of May, in the year of our Lord one thousand eight hundred and eighty, and of the hundred and fourth year of the independence of the United States of America.

LOUIS A. WILTZ.

By the Governor:

WILL. A. STRONG, Secretary of State.

The period of detention was left indefinite and dependent upon the action of the Board of Health, and in consequence this proclamation did not secure that measure of confidence in surrounding States which was to be desired.

At the earliest practicable moment this subject was again urged upon the attention of the Board of Health, and a resolution on the twelfth of May, was unanimously adopted to the following effect:

"SEC. 6. All vessels from ports in which yellow fever is prevailing, or from ports where other contagious or infectious diseases are reported to exist, shall be detained, for observation, disinfection, purification and fumigation, not less than seventy-two hours, or such length of time as the Board of Health may determine."

Under this rule all vessels liable to its application were detained not less than three days, and in all cases in which the public safety appeared to demand it, they were held from ten to twenty days.

The quarantine officers were directed never to release such vessels in less than three days, and in all cases where the public safety demanded it to hold them subject to the orders of the Board of Health.

The occurrence of the cases of fever on board the bark Excelsior in July led to the extension of the quarantine.

In 1881 the Governor issued his proclamation according to law and in accordance to the recommendations of the Board of Health, that the minimum detention should no be less than seventy-two hours.

This proclamation was without doubt an improvement upon that of 1880; but in accord ance with the prediction of the President, who had urged the establishment of th quarantine according to the original act of 1855, the Board was again forced by the de mands of the agents of the surrounding States, and certain maritime and railroad in terests, to make the period of quarantine detention not less than ten days.

8. In view of the preceding facts developed by a review of the history of quarantin in Louisiana from 1855 to the present time, I most respectfully urge the passage by th General Assembly of acts covering the following subjects:

First—The re-enactment of that portion of the act of 1855 which requires that th period of detention shall be not less than ten days.

Second—The modification of the quarantine fees, so as to conform strictly to the co stitution of the United States, and thus place all parties upon an equal footing.

AN ACT to fix and regulate quarantine charges at the Mississippi River Station, to establish a lien a privilege on vessels inspected, in favor of the Board of Health for the same, and to provide for th enforcement and collection by provisional seizure.

SECTION 1. *Be it enacted by the General Assembly of the State of Louisiana*, That the resident physician the Quarantine Station on the Mississippi River shall require for every inspection and granting certific the following fees and charges: For every ship, thirty dollars ($30); for every bark, twenty dollars ($ for every brig, ten dollars ($10); for every schooner, seven dollars and a half ($7 50); for every steamb (towboats excepted), five dollars ($5); for every steamship, thirty dollars ($30).

SEC. 2. *Be it further enacted, etc.*, That the Board of Health shall have an especial lien and privilege the vessels so inspected for the amount of said fees and charges, and may collect the same, if unpaid suit before any court of competent jurisdiction, and in aid thereof shall be entitled to the writ of provisi seizure on said vessels.

SEC. 3. *Be it further enacted, etc.*, That all laws and parts of laws in conflict with the provisions of act are hereby repealed, and all laws and parts of laws on the same subject-matter, not in con and inconsistent herewith, are continued in full force and effect.

R. N. OGDEN,
Speaker of the House of Representative
GEORGE L. WALTON,
President pro tem. of the Sena
S. D. McENERY,
Governor of the State of Louisian

Approved, July 1, 1882.

A true copy:

WILL A. STRONG, Secretary of State.

RESISTANCE OF QUARANTINE LAWS OF LOUISIANA MORGAN'S LOUISIANA AND TEXAS STEAMSHIP AND RA ROAD COMPANY.

The action of certain ship owners and maritime agents in resisting collection of the quarantine fees established by the act of 1855 for protection of the State against foreign pestilence, has been fully co ered by this board, and a large portion of the report of 1882 has been essarily consumed with a consideration of those questions which are to the protection of New Orleans and the Mississippi Valley.

The following communication was addressed to Attorney General J. C. Egan :

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, November 13, 1882.

Hon. J. C. Egan, Attorney General, State of Louisiana :

Sir—I have the honor to enclose a copy of a petition of the Morgan's Louisiana and Texas Railroad Company against this board, No. 7001 of the docket of the Civil District Court for the parish of Orleans, enjoining this board from collecting any fees under the quarantine laws of the State of Louisiana. This suit is one of several brought by different parties, and unless decided before next summer, will seriously embarrass this board in executing the law, by depriving them of the means of maintaining the service. The board designs pushing the matter as rapidly as possible, and their attorney has already filed an answer, and had the case summarily fixed for trial on Monday, November 20, 1882, at which time he hopes to try the case. Immediately on its decision in the lower court, it will be appealed to the Supreme Court of the State and placed on the summary docket; the board hopes for a decision in December or January. Should it be decided adversely to the plaintiffs, it will be taken by writ of error to the Supreme Court of the United States, and the attorney of the board will there endeavor to have its trial advanced, so as to have a final decision before that court adjourns. This can be done under rule 26 of the Supreme Court. The attorney of the board thinks that this can be most *certainly* done by the State of Louisiana making itself a party by intervention or otherwise, and refers us to 16 United States Stat. at Large, 176, 301, 15 Wal., 390; 2 Wal., 159, and United States Act 1870. As the question involved concerns the nullity and non-execution of all the quarantine laws of the State, it seems that the State is immediately and directly a party in interest, as in the event of a final decision, ultimately decreeing the laws of the State to be unconstitutional, or even in case the suit should go over until next winter, and the injunction remain pending the Governor would have to convene the State Legislature in extra session to provide means for the maintenance of the quarantine, or else abandon the system entirely, and leave the State and the whole Mississippi Valley a prey to the ravages of infectious and contagious disease by importation.

I, therefore, would respectfully request you to take proper steps to make the State a party to the suit, in order to effect the contemplated purpose. The attorney of the Board, Colonel F. C. Zacharie, who will hand you this, and more fully explain to you the details of the points at issue, will furnish you with a copy of his opinion thereon, and is prepared to fully attend to the matter, and consult with you, and the Board, as well and will be greatly obliged to you if you render what services you can in the premises. Hoping for an early reply, I am, respectfully,

(Signed) JOSEPH JONES, M. D.,
President Board of Health.

From the following statistics, consolidated under the direction of the President, from the archives of the Board of Health, it is evident that the action of Charles Morgan & Co., in 1874, led to the great reduction of the Quarantine receipts; and it is still further evident that at the present time the receipts from Quarantine are inadequate to its support, in accordance with the organic act of the General Assembly.

There has been and will be a progressive decrease in the Quarantine receipts on account of the increased depth of water at the mouth of the Mis-

sissippi River, and the increase in size, capacity and tonnage of vessels and steamships, and the corresponding diminution in their number.

Thus the number of vessels entering the Mississippi in 1860 exceeded 2000, whilst in 1881 there were but 1000 in round numbers.

No more important question could possibly engage the attention of the Board of Health, the General Assembly of the State and the Congress of the United States, than the support and maintenance of the Mississippi Quarantine.

YEAR.	EXPENDITURES FOR QUARANTINE PURPOSES.					
	At Mississippi Quarantine Station.	At Rigolets Quarantine Station.	At Atchafalaya Quarantine Station.	At the Central Office.	Total Expenditures for Quarantine Purposes.	Total Receipts from all Quarantine Stat'ns
1869	15,019 85	2,941 32	1,474 60	6,254 95	25,690 72	28,545
1870	13,201 28	2,543 21	2,259 50	6,679 18	24,683 17	24,910
1871	14,285 19	1,940 64	1,308 10	7,546 55	25,050 58	25,119
1872	12,402 84	895 35	981 00	6,437 59	20,716 78	21,671
1873	13,493 73	1,557 08	699 00	7,103 58	22,853 49	21,961
1874	11,557 10	380 85	190 00	7,080 24	19,208 19	20,003
1875	9,598 59	1,347 97	1,320 00	13,775 83	26,042 39	13,801
1876	14,038 97	662 32	51 80	6,543 10	21,296 19	20,061
1877	9,314 71	1,387 66	847 50	6,519 94	18,069 81	15,471
1878	13,858 80	929 19	711 99	8,720 17	24,220 15	20,024
1879	9,869 21	1,599 23	1,134 49	10,104 89	22,707 82	18,315
1880	14,388 91	1,720 17	813 83	8,294 84	25,217 55	22,046
1881	17,674 47	1,536 93	690 00	7,372 30	27,273 70	18,555
1882'	10,149 39	1,526 95	460 00	7,529 31	19,665 65	13,486

For ten months.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, January 3, 1882.

His Excellency, S. D. McEnery, Governor State of Louisiana, Baton Rouge, La. :

Dear Sir—I have the honor to enclose, for the information of your Exc lency, the outline of the decision of Judge Monroe, issuing an injuncti against the Board of Health, and declaring the quarantine system of L ana, established by the act of 1855, illegal.

The immediate effect of this decision will be to stimulate all mariti men to resist the payment of quarantine fees. The power of this lo court is thus exerted to overthrow the quarantine system of Louisiana. have directed the attorney of the board to take an immediate appeal to Supreme Court of Louisiana. In the event that the decision of the lo court is sustained the quarantine system of Louisiana will be practic destroyed, and it will be incumbent upon your Excellency to devise necessary measures, with the constituted and legal health authorities, the effectual exclusion of foreign pestilence. In the event that the Supr Court reverses the decision of the lower court, the attorney of the plai will be, most probably, instructed by C. A. Whitney & Co., to appeal case for final decision to the United States Supreme Court.

With great respect, I have the honor to remain, your obedient serv

JOSEPH JONES, M. D.,
President Board of Health, State of Louisia

The case of Morgan's Louisiana and Texas Railroad and Steamship C pany, versus the Board of Health of the State of Louisiana. No. 5755.

.ble argued by the attorney of the board, Col. F. C. Zacharie, and by Judge A. D. White, Assistant Counsel, before the Supreme Court of the State of Louisiana.

The following able and learned decision of the Supreme Court of Louisiana, sustaining the quarantine laws of the State, and upholding and sanctioning the official acts of the Board of Health in maintaining quarantine, and collecting fees for the support of the same was delivered by Associate Justice Fenner, on the twenty-first of January, 1884, in the city of New Orleans.

QUARANTINE FEES—THEY ARE LEGAL EXACTIONS OF THE STATE, IN PAYMENT FOR SPECIAL BENEFITS—THE QUARANTINE LAWS DO NOT INFRINGE THE POWER OF CONGRESS TO REGULATE COMMERCE.

THE MORGAN COMPANY REQUIRED TO PAY THE FEES OF THE BOARD OF HEALTH—HIGHLY IMPORTANT DECISION OF THE SUPREME COURT OF THE STATE OF LOUISIANA.

[New Orleans Picayune.]

The following opinion was delivered by Associate Justice Fenner on Monday, January 21:

No. 8755—Morgan's Louisiana and Texas Railroad and Steamship Company vs. The Board of Health of the State of Louisiana. Appeal from the Civil District Court, Parish of Orleans.

The Act No. 69, of 1882, of the General Assembly of the State of Louisiana, provides that "the Resident Physician at the Quarantine Station on the Mississippi River shall require, for every inspection and granting certificate, the following fees and charges: For every ship, $30; for every bark, $20; for every brig, $10; for every schooner, $7 50; for every steamboat (towboats excepted), $5; for every steamship, $30."

By virtue of other provisions of the quarantine laws of the State, it is made the duty of the resident physician, or his assistant, to visit and inspect every vessel entering the port of New Orleans through the Mississippi River. If he finds the vessel free from disease, not in a foul condition, and not from an infected district, he is required to furnish her with a "certificate of health" and allow her to proceed to the city. Vessels in a foul condition or having on board persons suffering or who have suffered during the voyage from contagious, pestilential or infectious diseases, he is required to detain for such time, not less than ten days, as he may deem neccessary, and to employ such means of purification of the vessels as may be directed by the Board of Health, and to require payment therefore from the vessel. Vessels out ten days from infected ports, presenting clean bills of health, not having nor having had sickness on board, and which are not in foul condition, shall be permitted to pass to the city after thorough fumigation by disinfecting agents. Revised Statutes, 3042-3-5.

The practice under these laws is to visit and inspect every vessel, and to require, in every case, the fee prescribed therefor; and in cases where, under the law, the service of disinfection by fumigation is rendered, to require therefor an additional fee of twenty or twenty-five dollars as the estimated expenses thereof.

Plaintiff is the owner of several vessels plying between the port of New Orleans and various other countries. The object of the present suit is to perpetually enjoin the collection of the fees and charges above mentioned, and to restrain the defendant from detaining the plaintiff's vessels because of their non-payment, on the ground that the laws authorizing the same are null and void because they contravene:

1. Article one, section eight, paragraph three of the Constitution of the United States, which provides that "Congress shall have power * * * to regulate commerce with foreign nations, and among the several States, and with the Indian tribes."

2. Article one, section ten, paragraph three, which provides that "No State shall, without the consent of Congress, lay any duty upon tonnage,"

We shall at the outset disembarrass the case of several questions upon which we heard much learned argument, by laying down certain propositions which we consider clearly settled by the Supreme Court of the United States, to whose opinion on such subjects we yield our firm adherence.

1. The laws in controversy are in no sense "inspection laws," and can derive no support from that clause of the Constitution of the United States recognizing the right of the States to pass such laws, and to levy duties and imposts in execution thereof. The inspection, duties and imposts intended by that provision referred exclusively to articles of merchandise, and not to vessels. Gibbons vs. Ogden, 9 Wheat., 203; People vs. Compagnie, 13 Reporter, 326.

2. So far as the exclusive power of Congress to regulate commerce is concerned, that power is not infringed by the laws under consideration, unless the fees and charges imposed thereby are in the nature of a duty on tonnage, in which case they would undoubtedly violate both the general reservation to Congress of the exclusive power to regulate commerce, and also the special prohibition to the States to lay any duty on tonnage. In other respects, the rights of a State to provide for the health of its people by establishing quarantine laws, and to subject vessels entering its ports to proper regulations as to inspection, detention, purification, etc., although necessarily affecting commerce, is, nevertheless, undisputed, subject, possibly, to the power of Congress to interfere and control it in its discretion. Gibbons vs. Ogden, 9 Wheat., 203; Passenger Cases, 7 How., 414; Peet vs. Morgan, 19 Wall, 581.

3. If the fees and charges complained of be of the nature of a duty on tonnage, the fact that they are levied under quarantine laws would not save them from the prohibition of the Federal Constitution. Such duties cannot be levied without the consent of Congress, and Congress has never consented, but on the contrary, in its acts of 1799 recognizing the existing quarantine laws of the States, it interposed the express *proviso* that nothing herein shall enable any State to collect a duty of tonnage or impost without the consent of the Congress of the United States thereto.

4. If the fees and charges be in the nature of a duty the fact that it is laid on the whole ship, and not at the rate of so much *per ton*, would not of itself exempt it from the Federal prohibition. Steamship Company vs. Poindexter, 3 Wall., 31; State tonnage tax cases, 12 Wall., 218.

This elimination leaves open, on this branch of the case, the solitary question, whether the fees and charges here involved are duties in the sense of the constitution? It is the well established jurisprudence that there are many forced contributions which government may exact from persons and property which are not considered as taxes, duties or imposts, within the meaning or control of constitutional restrictions upon the power to levy the latter. Such are contributions provided for the constructions of public works for the advantage of particular districts, like levees, drainage, pavements, etc., levied on the property with reference to the supposed benefits derived by the property from the works; contributions provided to defray the expenses of building bridges, erecting causeways, or removing obstructions in a water-course, and like the light dues paid by all nations to the Danes, to be paid by such individuals only who enjoy the advantage; and fees or charges for services lawfully rendered, like wharfage, pilotage and portwarden fees, to be paid by those who receive the services. States vs. Navigation Company, 11 Mart. O. S., 324; Crowley vs. Copley, 2 Ann., 329; Lafayette vs. Orphan Asylum, 1 Ann., 1, and etc.

In the first of the cases above quoted, Chief Justice Martin said that the words, "impost, tax on duty," as used in the consitution or laws, must be confined to the idea which they commonly and ordinarily present to the mind: exaction to fill the public coffers for the payment of the debt and the promotion of the general welfare of the country and not to contributions as the supposed equivalent of benefits conferred or services rendered, like those above indicated.

It is apparent from the face of the laws here attacked that the fees and charges complained of are demanded as compensation for labor performed, expenses incurred and services rendered directly in connection with the vessels, the necessity for which arises solely from the fact that such vessels, in the exercise of an undoubted right, yet voluntarily and in pursuit of their own interests, choose to seek the port of New Orleans, well knowing that they cannot enter said port without first being inspected, and, if necessary, purified in conformity with laws to that extent unquestionably valid. Can it be said that the rendition of these services, by virtue of which alone the vessel is enabled lawfully, to proceed to her destined port, is not a service to the vessel.

It is said that it cannot be considered as a service, because the vessel does not regard it as such, but rather as a burden, and because she does not voluntarily seek or avail herself of it. As to the first point, the question would seem to be, not whether the vessel regards it as a service, but whether it is a service and whether she ought to regard it as such. It seems the plainest development of the primal duty, *sic utere tuo ut alterum non laedere*, that a vessel should seek and desire the performance of services the object of which is to prevent the chance of her spreading disease and pestilence amongst the populations. She is under the plain obligation, moral as well as legal, to do everything to avoid such risk, and the service which enables her to perform this obligation would seem so be a service to her.

As to the second point that the services are forced and not voluntary, the reliance placed upon the decisions of the Supreme Court of the United States in the wharfage and portwarden cases seems not well founded. In those cases there was no legal duty imposed on vessels to land at the wharves or to receive the services of the portwardens. They had the perfect right to decline these benefits and services and they properly held that a State law exacting contribution for them, whether used or not, was unconstitutional. But had it been the legal duty of vessels to land at a particular place in the port of New Orleans, and had the city provided expensive wharves at such places, it is supposed that she would not have had the right to exact compensation for the facilities thus afforded, although vessels landing at the port would have had no option as to accepting the use of them.

Finally, it is claimed that the services rendered under these quarantine regulations are for the benefit of the people of the city and State, and not for that of the vessel. No doubt that is true. It is equally true that the object of the city in building wharves was to benefit its own people, trade and commerce. We deem it unnecessary to consider more at length the objections which have been forcibly urged against the theory that the services in question are rendered to the vessel in such a manner as to justify the exaction of compensation therefor. What we have said sufficiently expresses our views on the subject, and while the question is not free from difficulty, even to our own mind, we are confirmed in our course by the reflection that it leaves the avenue open for correction of any error which we may commit by appeal to the Supreme Court of the United States, whereas if we should err in the opposite direction, the defendants would not be entitled to that remedy.

The broad proposition of plaintiff, that in the exercise of the right to establish quarantine systems, the States are bound to bear all the expenses thereof, and cannot throw the burden, in any manner, or to any extent, upon commerce, has certainly not yet received the indorsement of the Supreme Court of the United States.

In the passenger cases, Mr. Justice Wayne, summing up, in his separate opinion, his view of what the entire court meant to decide, included, among other propositions, the following: "That the States may, in the exercise of their police power, pass quarantine and health laws, etc., and may, in the exercise of such police power, without violation of the power in Congress to regulate commerce, exact from the owner or consignee of a quarantined vessel, such fees as will pay to the State the cost of detention and purification of the vessel, cargo and apparel of the persons on board."

Nothing in any of the several opinions rendered in the case clashes with this statement or indicates any dissent therefrom. Passenger Cases, 7 How., 414.

In the case of Peete vs. Morgan, strenuously relied on by plaintiff, the court, after recognizing the right of the States to pass quarantine laws, said: "It is evident that the power to establish quarantine regulations cannot be executed without the State possesses the means to raise a revenue for their enforcement, but it is equally evident that the means used for this purpose must be of such a character as the restrictions imposed by the Federal Constitution upon the taxing power of the State authorize."

It cannot be doubted that the court meant to sanction the right of a State, in its quarantine laws, to raise a revenue for their enforcement, in some way connected with their execution. To suppose that the means to raise a revenue referred to as implied in the power to establish quarantine, meant only the ordinary powers of taxation of the State's own citizens and property, would be to accuse the court uttering a mere inanity. We can conceive of no other means which could have been in view, except just such exactions of compensation for services as are provided in these laws of Louisiana.

As far as appears from the statement and opinion in Peete vs. Morgan, the charge there in question was a clear and simple duty on tonnage, levied by the State without any reference to services rendered, and we think it has no application to the instant case, except in the clause above quoted.

We find nothing inconsistent with the foregoing views in the proviso inserted in the late act of Congress of 1799. That was an act empowering and directing the officers of the General Government to conform to and assist in the execution of the quarantine laws of the States. All or most of the seaboard States had such laws, the nature and mode of execution of which must have been known to Congress. Those laws contained provisions authorizing the exaction of fees and charges for inspection, disinfection, etc., entirely similar to those in the laws of Louisiana. For instance the law of South Carolina, passed as early as 1759, forbade vessels bound for Charleston from infected ports from passing Fort Johnson until visited, inspected and certified by one of certain named physicians, and obliged the owner or master to pay such physicians a fee of £7 10s currant money, and, moreover, the expense of the boat and hands to carry down such physician to visit the said vessel and to bring him up again to Charleston.

Nothing in the acts of Congress reprobates such charges, and it must be supposed that the proviso forbiding the levy of any duty of tonnage did not refer to charges for services of this character, but was intended to shut out any implication of a consent by Congress to the imposition of tonnage duties proper.

There is nothing in the laws of this State or in their execution, as disclosed by the evidence, indicating the purpose of levying a forbidden tonnage duty under the guise of charges for service The services are shown to be actually rendered, and the charges are not excessive to a degree sufficient to authorize judicial interference. It is proved that the revenue derived therefrom is devoted exclusively to quarantine purposes, and in no year has it been sufficient to defray the quarantine expenses.

We therefore hold that the plaintiff is not entitled to the relief asked.

As we maintain the validity of act 69 of 1882, the constitutional objection to the act of 1870 (Rev. Stat , sec. 3042), on the ground of discrimination between the ports of different States, does not arise, the law in this particular being repealed by the act of 1882.

The claim that the act contravenes article forty-eight or thirty of the Constitution of the State is without foundation. The act is neither local or special, but is of the more general character, intended for the benefit and protection of the entire people of the State.

Neither does it revive or amend any prior law. It is an original and independent statute, repealing such portions of prior laws on the same subject matter as are inconsistent with it.

It is therefore ordered, adjudged and decreed that the judgment appealed from be annulled, avoided and reversed, and it is now adjudged and decreed that the injunction herein granted be now dissolved and that plaintiff's demand be rejected at his cost in both courts.

After a continuous battle, of four years duration, in which the vast maritime interests of the State, and the power and influence of the wealthiest railroad and steamship company in the Southwestern States, were marshalled against the legally constituted health authorities, the Board of Health of the State of Louisiana achieved a memorable and signal victory on the twenty-first of January 1884, in the complete and triumphant vindication of its efforts to exclude foreign pestilence from the Mississippi valley, by the highest legal tribunal of the State of Louisiana.

If the decision of the Supreme Court had been adverse to the Board o Health, the quarantine laws of Louisiana would have been rendered pow erless for the exclusion of foreign pestilence. Quarantine must be sustained either by an appropriation from the State government, or from the inspec tion fees; the General Assembly of Louisiana had made no appropriation for the maintenance of quarantine; therefore if the decision of the Lowe Court had been sustained by the Supreme Court of Louisiana, an extra ses sion of the Legislature would have been necessary for the appropriation fo the support of the officers and employes, the supply of disinfectants, the maintenance of the hospitals, and the isolation and treatment of seame and passengers, suffering with contagious and infectious diseases. Th actual expenses of an extra session of the Legislature of Louisiana, woul have imposed an additional burden upon the taxpayers of the State whic would have exceeded the amount now collected for the support of quara tine at least four times; in other words, the expenses of the extra sessio would have been sufficient to maintain the quarantine system, during period of four years and longer.

The records of the Board of Health show that the Morgan's Louisia and Texas Railroad Company is indebted to the State of Louisiana, f quarantine fees, about $14,385; and the Cromwell Steamship Line $8,40 total amount due the State of Louisiana by the Morgan and Cromwell line about $22,865.

The decision of the Supreme Court of Louisiana, in case No. 8755, n merely relieved the citizens from the additional expense of an extra sessi of the General Assembly, but also affirmed the right of the State to ov $22,000 dollars, due for unpaid quarantine fees, by the Morgan and Cro well lines.

The decision of the Supreme Court of Louisiana has confirmed t view held and strenuously advocated by the President of the Board Health that:

The fees collected by the State of Louisiana from vessels subjected to the quarantine laws are not in the nature of a tax or impost on commerce, but are a just and necessary compensation for the great service rendered commerce in the cleansing and disinfection of the vessels and cargoes, in the care and treatment of the sick by the medical officers of the State, and by the exclusion of foreign pestilence, and the establishment of public confidence, and the maintenance of commerce, which, but for the said quarantine service would be greatly damaged.

Were it not for the execution of the quarantine laws by the Board of Health of the State of Louisiana, the port of New Orleans would be hermetically sealed to commerce during from four to six months every year, and all intercourse with the surrounding States would be closed by the *shotgun quarantine, controlling the river and railroads.*

The decision of the Supreme Court of Louisiana, is of interest and importance to every State and municipal government in the United States of America, for the doctrine is here clearly recognized, that:

The establishment and enforcement of quarantine by individual States is not a regulation of commerce in violation of the provisions of the Federal constitution, but is the legitimate exercise of the POLICE POWERS, *by the individual States which are* INALIENABLE, AND WHICH IN A REPUBLIC, *cannot be surrendered to the* GENERAL GOVERNMENT, *without transforming the sovereign States, into the dependent provinces of a centralized* DESPOTISM.

COMPARATIVE VIEW OF THE MORTALITY OF NEW ORLEANS DURING THE PERIOD OF FOUR YEARS; 1880, 1881, 1882 AND 1883.

RELATIONS OF DISEASE AND DEATHS IN NEW ORLEANS TO RACE, TEMPERATURE, RAINFALL AND MOISTURE—OUTLINE OF THE SANITARY WORK PERFORMED UNDER THE DIRECTION OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA DURING 1880, 1881, 1882 AND 1883—COMPARATIVE VIEW OF THE DISEASES AND MORTALITY OF THE VARIOUS DISTRICTS OF NEW ORLEANS.

The following tables illustrate :

1. *The population of the city of New Orleans, divided according to race and sex by the United States Census for the year* 1880, *and estimated increase for succeeding years, based upon the ratio of increase between the years* 1870 *and* 1880.

2. *Tabulated statement of the mortality of New Orleans, Louisiana, during the years* 1880 *to* 1883, *inclusive.*

These tables are of value in that they embody data capable of comparision with the vital and mortuary statistics of various European and American cities.

Aside from their scientific value in their relations to ethnological, medical and sanitary science, they possess a material value in the light which they may throw upon the operations of the various foreign and domestic life insurance companies.

POPULATION OF THE CITY OF NEW ORLEANS, LOUISIANA, DIVIDED ACCORDING TO RACE AND SEX, BY UNITED STATES CENSUS FOR THE YEAR 1880, AND ESTIMATED INCREASE FOR SUCCEEDING YEARS, BASED UPON THE RATIO OF INCREASCE BETWEEN THE YEARS 1870 AND 1880.

YEAR.	White.			Colored.			White and Colored.		
	Males.	Females.	Totals.	Males.	Females.	Totals.	Males.	Females.	Totals.
1880	75,693	82,702	158,395	25,247	32,501	57,748	100,940	115,203	216,143
Average	76,072	83,273	159,345	25,493	32,659	58,152	101,565	115,931	217,497
1881	76,450	83,844	160,295	25,740	32,816	58,556	102,190	116,660	218,851
Average	76,837	84,419	161,256	25,993	32,972	58,965	102,830	117,392	220,222
1882	77,224	84,994	162,218	26,246	33,129	59,375	103,470	118,123	221,593
Average	77,605	86,586	163,191	26,501	33,289	59,790	104,106	118,876	222,982
1883	77,986	86,178	164,164	26,756	33,450	60,206	104,742	119,628	224,370
Average	78,369	86,775	165,144	27,017	33,610	60,627	105,386	120,385	225,771
1884	78,753	87,372	166,125	27,277	33,771	61,048	106,030	121,143	227,173

TABULATED STATEMENT OF MORTALITY OF NEW ORLEANS, LOUISIANA, DURING THE YEARS 1880 TO 1883, INCLUSIVE.

Year	Whites.			Colored.			White and Colored.			Death Rate per 1000 Population.									
										Whites.			Colored.			Total.			
	Males.	Females.	Totals.	Males.	Females.	Totals.	Males.	Females.	Totals.	Males.	Females.	Totals.	Males.	Females.	Totals.	Males.	Females.	Totals.	Total Exclusive of Small-Pox.
1880	2050	1587	3637	1003	983	1986	3053	2570	5623	26.87	19.05	22.82	39.34	30.09	34.10	30.03	22.16	25.85	25.85
1881.	2419	1708	4127	1178	1101	2279	3593	2813	6406	31.47	20.23	25.59	45.32	33.36	38.31	34.94	23.96	29 08	29.08
1882.	2104	1478	3582	1225	1115	2340	3329	2593	5922	27.11	17.10	21.88	46.22	33.49	39.14	31.97	21 81	26.60	24 69
1883.	2657	1895	4552	1634	1337	2971	4291	3232	7523	35.18	21.83	27.56	60.47	39.78	49.00	40.71	26 84	33.32	27.71

[A.]

TABULATED EXHIBIT OF MORTALITY FROM SOME OF THE CHIEF FATAL DISEASES IN THE CITY OF NEW ORLEANS DURING THE FOUR YEARS 1880 TO 1883, INCLUSIVE, BY WEEKS.

1880.

WEEK ENDING.	Small-Pox.		Yellow Fever.		Malarial Fevers.		Diarrhœal Diseases.		Phithisis Pulmonalis.		Diphtheria.		Croup.		Bronchitis.		Pneumonia.		Congestion of Brain.		Scarlatina.		Sunstroke.		Measels.	
	w.	c.	w.	c.	w	c.	w.	c.	w.	c	w.	c.	w.	c.	w	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.
Jan. 4	...	...	..	...	1	1	5	0	9	8	3	...	4	...	1	...	5	2	...	1	...	...	...	...	..	...
11	...	...	...	..	1	3	3	2	9	8	2	..	...	...	1	1	5	6	..	...	...	..	...	...	...	...
18	...	...	...	...	1	...	2	..	7	3	1	...	...	...	1	...	4	5	3	...	...	...	...	...	...	...
25	...	...	...	...	...	...	2	7	3	2	..	...	1	...	.	2	2	2	1	...	1	...	...	...	...	...
Feb. 1	...	...	...	...	1	1	4	2	9	5	2	1	3	...	3	..	2	4	1	2	...	...	...	...	...	...
8	...	...	..	...	1	..	4	3	12	11	..	...	...	...	2	4	6	4	2	1	...	...	...	...	...	...
15	...	...	...	...	3	1	1	..	14	5	2	...	3	...	3	6	5	2	2	...	...	...	...	...	...	...
22	...	...	...	...	3	3	1	2	6	10	1	...	1	...	..	3	5	4	...	...	...	...	...	...	...	...
29	...	...	...	...	4	...	1	2	7	7	1	...	...	...	4	3	6	6	1	1	1	...	...	...	2	..
Mar. 7	...	...	...	...	1	...	2	4	6	8	2	...	...	...	1	2	3	5	...	...	...	...	...	...	...	...
14	...	...	...	...	...	2	1	2	4	4	1	1	...	...	3	1	6	3	2	...	1	...	...	...	...	...
21	...	...	...	...	...	...	3	...	9	9	...	...	1	...	2	1	4	6	3	...	...	1	...	...	1	1
28	...	..	...	..	8	1	2	2	9	10	...	...	...	...	1	3	5	3	1	...	...	1	...	...	1	...
April 3	...	...	...	...	8	...	2	...	18	9	1	...	1	...	2	...	3	3	2	...	...	...	...	...	1	...
10	...	...	...	...	2	...	3	...	11	5	...	...	...	...	3	1	3	2	...	...	2	...	...	...	4	...
17	...	...	...	...	3	1	2	2	10	6	...	...	...	...	3	3	4	2	1	...	1	...	...	...	3	1
24	...	...	...	...	2	...	2	2	17	8	1	...	1	1	1	4	6	2	...	1	...	...	...	...	6	2
May 1	...	...	...	...	5	1	6	4	9	1	1	...	...	...	2	1	1	2	3	3	...	...	...	...	2	2
8	...	...	...	...	4	1	5	...	11	12	1	...	...	...	3	1	6	4	...	...	2	...	...	...	4	3
15	...	...	...	...	9	4	8	...	6	7	1	...	...	...	...	...	3	3	5	...	1	...	...	...	2	3
22	...	...	...	...	2	2	10	3	7	8	1	...	...	...	2	...	2	4	2	1	...	...	...	...	7	6
29	1	.	...	...	2	1	6	10	12	6	...	1	...	...	...	...	3	1	3	1	2	...	...	...	6	8
June 5	...	...	...	...	5	3	8	7	7	7	4	...	...	...	1	...	3	5	3	1	2	...	...	...	4	3
12	...	...	...	...	9	2	9	6	17	8	4	...	1	...	1	2	3	3	4	1	2	...	...	...	3	2
19	...	...	...	...	6	...	7	11	6	5	...	1	...	...	1	3	4	4	5	...	...	...	1	...	5	2
26	...	...	...	...	4	2	9	2	10	10	...	...	...	...	2	2	1	3	1	...	2	...	...	...	2	2
July 3	...	...	...	...	5	...	2	10	9	1	...	...	1	...	...	...	3	2	1	...	...	...	...	..	1	1
10	...	...	...	...	1	3	6	3	10	2	...	...	...	...	...	...	2	3	3	...	3	...	...	...	..	2
17	...	..	...	...	5	1	1	...	6	5	2	...	1	...	1	1	...	2	1	...	2	1	...	...	2	2
24	...	...	...	...	5	3	5	2	11	7	3	...	...	...	...	...	...	2	...	1	2	1	...	...	...	...
31	...	...	...	...	2	1	2	1	10	6	1	...	...	...	1	...	...	5	2	...	2	...	...	...	1	...
Aug. 7	...	...	...	...	2	3	1	4	2	9	1	1	...	...	...	...	1	..	1	1	1	...	...	...	1	...
14	...	...	...	...	3	5	1	1	8	3	2	...	...	...	...	1	...	3	...	...	2	...	...	...	...	...
21	...	...	...	...	5	2	4	...	9	9	1	...	...	...	1	...	2	1	3	...	1	...	...	...	...	...
28	...	...	...	...	5	4	12	2	6	8	2	...	...	...	...	...	2	1	4	...	...	...	...	...	...	...
Sept. 4	...	...	...	...	11	6	4	2	8	7	1	...	...	1	...	1	2	1	5	2	...	...	...	...	...	...
11	...	...	...	..	7	5	2	...	11	5	...	...	...	...	1	...	2	2	1	...	...	...	...	...	...	...
18	...	...	..	...	14	7	3	2	8	5	1	...	...	...	...	...	5	2	4	2	...	...	...	...	...	...
25	...	...	...	...	8	2	2	...	...	4	...	..	1	...	2	2	1	1	1	1	...	...	...	1	...	...
Oct. 2	...	...	...	...	12	5	5	3	5	7	1	...	...	2	...	5	2	2	3	...	...	...	...	...	...	...
9	...	...	1	...	3	5	2	1	7	8	2	...	...	...	...	...	...	5	1	1	...	...	...	...	...	...
16	...	...	...	...	7	2	5	2	7	6	2	1	...	...	...	...	2	...	2	...	...	...	...	...	...	...
23	...	...	...	...	9	3	3	4	9	2	3	...	1	...	1	...	4	1	1	1	...	...	...	...	...	...
30	...	...	...	...	10	...	6	2	17	4	5	...	2	1	...	...	4	3	6	...	2	...	...	...	...	...
Nov. 6	...	...	...	...	11	4	6	...	13	5	...	...	...	...	2	1	3	...	...	2	...	...	...	...	...	...
13	...	...	...	..	5	2	6	3	18	5	4	...	2	...	4	1	2	2	3	...	1	1	...	...	...	...
20	...	...	...	...	4	2	4	...	12	10	3	...	...	...	2	...	...	3	2	1	1	...	...	...	...	...
27	...	...	...	...	1	3	1	1	20	11	3	...	2	...	5	1	2	...	...	3	2	...	...	...	...	...
Dec. 4	...	...	...	...	5	1	1	2	17	5	..	...	1	...	2	1	4	3	2	...	2	...	...	...	...	...
11	...	...	...	...	4	1	1	2	9	8	2	1	...	...	1	...	2	4	3	1	1	...	...	...	...	...
18	...	...	...	...	1	2	5	1	14	4	5	...	3	...	1	...	2	3	2	...	3	...	...	...	...	...
25	...	...	...	...	3	...	4	1	10	11	2	.	2	1	1	..	4	3	1	2	...	1	...	...	...	...
31	...	...	...	...	2	...	...	3	8	9	3	...	3	...	1	1	7	0	3	2	3	...	...	...	...	...
Total w. and c.	1	...	1	...	235	101	202	125	519	349	78	7	38	4	71	53	158	146	98	33	46	7	2	...	59	40
Total	1		1		336		327		868		85		42		124		304		131		53		2		99	

[B.]

TABULATED EXHIBIT OF MORTALITY FROM SOME OF THE CHIEF FATAL DISEASES IN THE CITY OF NEW ORLEANS DURING THE FOUR YEARS, 1880 TO 1883, INCLUSIVE. BY WEEKS.

1881.

WEEK ENDING	Small-Pox.		Yellow Fever.		Malarial Fever.		Diarrhœal Diseases.		Phthisis Pulmoralis.		Diptheria.		Croup.		Bronchitis.		Pneumonia.		Congestion of Brain.		Scarlatina.		Sun-Stroke.		Measles.	
	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.
Jan. 8	...	...	...	...	2	...	5	..	17	7	3	1	2	1	2	...	5	7	3	3	5	...	...	...	...	...
15	...	...	...	...	3	1	5	1	11	11	2	...	...	...	9	...	10	14	...	...	4	1	...	...	...	...
22	...	...	...	...	...	...	4	3	10	7	4	...	...	1	2	...	2	3	1	1	2	...	...	...	...	..
29	...	...	...	...	2	...	2	...	11	10	5	...	1	..	8	1	9	7	2	1	5	...	...	...	...	...
Feb. 5	...	...	...	...	1	1	1	...	10	5	2	...	...	...	3	2	3	8	3	...	6	...	...	...	...	...
12	...	...	...	...	1	...	5	3	13	8	3	1	1	...	3	2	7	6	3	...	1	1	...	...	...	...
19	...	...	...	...	1	1	6	2	10	8	3	1	...	1	2	3	3	6	3	1	5	...	...	...	...	...
26	...	...	...	...	4	1	2	4	17	5	5	1	2	...	3	2	3	4	1	...	3	1	...	...	3	...
Mar. 5	...	...	...	...	1	1	2	...	5	10	1	...	1	...	...	1	8	3	...	...	7	2	...	...	...	...
12	...	...	...	...	1	1	1	...	17	9	1	1	1	..	7	1	10	11	5	...	9	1	...	...	...	...
19	...	...	...	...	2	...	1	3	9	7	3	1	1	..	1	3	5	8	...	...	8	...	...	...	1	...
26	...	...	...	...	5	3	5	3	21	13	2	...	1	...	3	2	4	5	...	...	8	1	...	...	...	...
April 2	...	...	...	...	6	3	...	...	10	7	1	...	1	...	4	2	6	6	1	...	6	...	...	1	1	...
9	...	...	...	...	1	1	6	...	20	8	...	..	...	...	8	1	9	4	...	...	10	4	...	...	1	.
16	...	...	...	...	3	2	3	1	10	5	..	...	1	...	3	3	3	3	...	...	9	...	...	...	1	.
23	...	...	...	...	8	1	1	2	10	4	2	...	...	...	1	1	3	6	3	...	13	2	...	...	1	.
30	1	...	...	...	5	...	3	2	8	12	2	...	2	...	1	2	4	2	...	3	7	4	...	...	5	..
May 7	...	...	...	...	...	3	13	3	11	8	2	...	...	...	2	...	5	4	3	2	8	4	...	...	1	..
15	1	...	...	...	2	2	10	4	15	8	2	1	...	...	1	...	1	3	5	...	6	4	...	...	3	..
21	...	...	...	...	2	1	22	8	13	8	...	...	...	...	...	...	3	3	2	1	5	1	...	...	...	...
28	...	...	...	...	2	1	24	9	11	13	2	..	...	...	1	...	...	2	2	...	6	3	...	...	1	.
June 4	...	...	...	...	4	2	25	12	9	6	2	1	...	...	1	1	2	4	...	2	4	1	...	..	1	
11	...	...	...	...	6	4	34	12	7	2	1	...	...	...	2	1	2	2	4	...	2	...	2	...	...	...
18	...	...	...	...	6	...	19	13	11	3	...	...	...	...	1	1	1	1	12	3	6	1	7	..	1	
25	...	...	...	...	15	4	19	10	6	7	1	1	...	...	...	...	1	...	14	1	3	...	13	4	1	.
July 2	...	...	...	...	6	3	10	7	5	11	...	...	1	...	3	...	1	...	3	2	1	1	1	...	...	...
9	...	...	...	...	5	4	5	6	12	5	2	1	...	...	...	...	...	...	3	3	2	1	1	...	...	...
16	...	...	...	...	4	3	14	3	11	9	1	...	...	...	2	...	...	...	3	1	3	1	3	..	...	...
23	...	...	...	...	7	4	6	5	7	4	1	...	...	...	2	1	1	2	3	...	1	1	...	...	...	.
30	...	...	...	...	19	4	5	7	11	5	...	1	...	...	...	...	4	...	4	3	...	...	1	...	...	...
Aug. 6	...	...	...	...	7	3	...	3	8	10	1	..	...	...	1	2	..	...	1	...	...	...	...	...	...	...
13	...	...	...	...	3	1	7	1	6	8	3	...	...	...	..	...	1	1	1	...	1	1	...	...	...	...
20	...	...	...	...	6	4	7	5	12	4	3	1	...	...	...	...	1	1	1	..	1	...	...	...	...	...
27	...	...	...	...	15	2	5	3	5	9	...	...	...	1	...	...	...	...	3	1	...	...	...	...	...	...
Sept. 3	...	...	...	...	12	8	6	3	9	7	2	2	...	...	...	...	2	...	1	1	...	...	...	...	...	...
10	...	...	...	...	6	4	7	4	3	8	...	...	...	...	...	...	1	1	3	1	1	...	...	...	...	...
17	...	...	...	...	7	6	6	2	9	10	2	...	...	...	1	2	1	...	1	...	...	...	...	...	...	...
24	...	...	...	...	7	10	5	3	5	5	...	...	...	...	3	1	5	1	...	...	...	...	...	...	...	...
Oct. 1	...	...	...	...	8	8	3	6	8	5	...	...	...	...	1	1	1	1	2	1	...	...	...	...	...	...
8	...	...	...	...	10	5	5	3	4	6	..	...	1	...	1	2	2	1	3	1	1	...	...	...	...	...
15	...	...	...	...	9	2	3	1	6	7	2	...	...	...	1	1	3	1	5	..	1	...	...	...	...	...
22	...	...	...	...	8	3	5	1	13	4	1	...	...	...	1	1	...	...	3	...	...	...	...	...	...	...
29	...	...	...	...	3	2	11	4	8	11	1	1	...	...	1	1	2	2	2	...	...	...	...	...	...	...
Nov. 5	...	...	...	...	6	2	10	2	7	9	2	...	...	...	...	...	1	2	1	1	...	...	...	...	...	...
12	...	...	...	...	8	5	10	6	8	10	2	...	3	...	1	2	1	2	...	...	1	...	...	...	...	...
19	...	...	...	...	5	5	5	5	11	7	...	...	...	...	...	5	1	5	...	...	...	1	...	...	...	...
26	...	...	...	...	5	2	5	5	8	9	1	...	...	...	1	2	5	4	1	...	...	...	...	...	...	...
Dec. 3	...	...	...	...	8	...	9	2	9	9	1	...	1	...	1	...	2	4	2	...	1	...	...	...	...	...
10	..	1	...	...	2	...	4	4	9	5	...	...	1	...	3	1	2	2	3	...	...	...	...	...	...	...
17	...	...	...	...	2	..	6	1	12	7	1	...	1	..	3	2	3	4	..	1	1	...	...	...	...	...
24	...	1	...	...	4	5	7	2	10	9	1	...	1	...	2	1	4	11	3	1	..	...	...	...	...	...
31	1	...	...	...	4	1	7	...	4	4	...	...	...	...	4	1	5	2	1	..	1	...	...	...	...	...
Total w. and c.	3	2	...	...	267	129	391	189	512	388	76	15	23	4	99	55	158	169	117	36	160	37	28	4	21	
Total	5		—		396		580		900		91		27		154		327		153		197		32			

[C.]

TABULATED EXHIBIT OF MORTALITY FROM SOME OF THE CHIEF FATAL DISEASES, IN THE CITY OF NEW ORLEANS, DURING THE FOUR YEARS, 1880 TO 1883, INCLUSIVE, BY WEEKS.

1882.

WEEK ENDING	Small-Pox.		Yellow Fever.		Malarial Fevers.		Diarrhœal Diseases.		Phthisis Pulmonalis.		Diphtheria.		Croup.		Bronchitis.		Pneumonia.		Congestion of Brain.		Scarlatina.		Sun Stroke.		Measles.	
	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.
Jan. 7	0	1	0	0	5	1	7	0	9	8	1	0	2	0	3	2	1	4	0	0	1	0	0	0	0	0
14	0	0	0	0	4	1	5	1	9	3	0	0	1	0	4	0	3	5	2	0	0	0	0	0	0	0
21	1	0	0	0	6	2	1	0	9	8	2	0	1	0	1	2	2	1	1	0	1	0	0	0	0	0
28	0	4	0	0	1	2	4	4	8	11	0	0	2	0	1	2	3	6	1	0	1	0	0	0	0	0
Feb. 4	0	0	0	0	2	3	5	4	15	10	0	0	1	0	2	2	1	1	0	0	1	0	0	0	0	0
11	0	2	0	0	1	4	5	1	17	2	0	0	1	0	2	1	0	1	0	0	1	0	0	0	0	0
18	1	3	0	0	5	0	4	2	12	16	1	0	4	0	1	1	2	4	1	1	2	0	0	0	0	0
25	1	2	0	0	0	1	1	0	10	6	0	0	0	1	0	0	2	1	1	3	3	0	0	0	0	0
Mar. 4	1	1	0	0	1	2	1	2	8	11	0	0	0	0	2	1	1	3	1	2	1	0	0	0	0	0
11	1	5	0	0	1	1	1	0	8	6	0	0	0	0	2	1	4	6	1	0	0	0	0	0	0	0
18	5	19	0	0	0	1	2	2	11	8	0	0	0	0	0	1	2	2	2	1	1	0	0	0	0	0
25	3	12	0	0	3	2	1	0	9	7	2	0	1	0	3	0	2	4	4	1	0	0	0	0	0	0
April 1	3	14	0	0	2	0	1	0	6	8	2	0	0	0	2	0	0	4	0	0	0	0	0	0	0	0
8	5	12	0	0	2	3	9	2	8	2	2	0	1	0	1	2	2	4	2	0	0	0	0	0	0	0
15	8	9	0	0	2	6	12	4	6	9	0	0	0	0	1	4	3	3	3	0	1	0	0	0	0	0
22	4	14	0	0	6	1	5	2	11	8	1	0	1	0	1	1	1	3	3	0	1	0	0	0	0	0
29	5	11	0	0	1	3	12	4	9	7	2	0	2	0	1	0	0	4	1	2	0	0	0	0	0	0
May 6	4	11	0	0	2	2	11	3	11	8	0	0	0	0	0	0	3	0	1	0	1	0	0	0	0	0
13	3	12	0	0	4	2	8	7	8	6	1	0	1	0	1	2	2	2	0	0	0	0	0	0	0	0
20	6	17	0	0	5	2	3	6	11	7	0	0	0	0	1	0	1	2	1	0	1	1	0	0	0	0
27	4	6	0	0	6	5	11	5	12	4	0	0	0	0	1	4	1	3	1	2	2	0	0	0	0	0
June 3	4	12	0	0	9	3	6	3	4	9	3	0	1	0	0	5	1	1	0	1	0	0	0	0	0	0
10	10	15	0	0	8	4	6	5	10	1	0	1	0	0	2	1	1	1	2	0	1	0	0	0	0	0
17	3	12	0	0	5	7	2	4	9	6	1	0	0	0	0	0	2	2	1	0	0	0	0	0	0	0
24	4	8	0	0	8	9	9	0	14	8	2	0	1	0	0	1	1	1	0	0	1	0	0	1	0	0
July 1	2	7	1	0	5	5	8	6	12	3	1	0	0	0	2	1	1	2	1	0	2	0	0	0	0	0
8	6	4	0	0	4	2	6	7	9	7	2	0	0	0	0	2	2	2	1	0	2	0	0	1	0	0
15	3	1	0	0	3	4	2	4	11	5	0	0	0	0	0	3	1	0	0	0	2	0	0	0	0	0
22	3	7	1	0	3	1	2	2	9	3	0	0	0	0	3	1	0	2	0	0	2	1	0	0	0	0
29	0	3	0	0	6	2	6	0	11	7	0	0	0	0	2	1	0	2	0	0	2	1	0	0	0	0
Aug. 5	2	4	1	0	5	3	8	2	9	6	0	1	0	0	1	0	1	0	3	1	3	0	0	0	0	0
12	1	4	0	0	3	2	8	1	5	8	0	0	0	0	1	1	0	2	1	0	1	0	0	0	0	0
19	2	2	1	0	7	0	7	1	7	9	0	1	1	0	0	1	1	0	2	0	1	0	0	0	0	0
26	2	3	0	0	8	3	1	2	6	12	0	0	0	0	1	2	0	0	1	0	1	1	0	0	0	0
Sept. 2	0	5	0	0	12	4	6	1	13	2	0	0	0	0	1	1	2	0	1	1	0	0	0	0	0	0
9	0	4	0	0	2	6	2	5	8	5	1	0	0	0	1	0	2	0	0	0	1	0	0	0	0	0
16	1	1	0	0	3	3	2	1	5	9	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
23	0	2	0	0	8	4	4	1	10	4	1	0	1	0	1	0	1	0	1	0	0	1	0	0	0	0
30	0	3	0	0	13	2	5	2	6	4	1	0	0	0	1	1	2	2	0	0	0	0	0	0	0	0
Oct. 7	0	2	0	0	12	1	2	0	6	1	2	0	2	0	2	3	1	0	0	0	1	0	0	0	0	0
14	1	6	0	0	16	2	5	2	17	6	1	0	1	0	0	2	0	3	2	0	0	0	0	0	0	0
21	0	4	0	0	10	2	1	2	12	6	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
28	0	3	0	9	8	6	9	2	6	7	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Nov. 4	0	2	0	0	2	5	6	4	6	7	0	0	1	0	1	1	4	2	1	0	0	0	0	0	0	0
11	0	1	0	0	11	1	8	3	10	10	1	0	1	0	2	1	0	1	0	2	0	0	0	0	0	0
18	0	1	0	0	6	3	8	6	8	6	1	0	0	0	7	0	2	3	0	0	2	0	0	0	0	0
25	0	1	0	0	4	4	7	1	11	8	0	0	0	0	4	1	6	4	3	1	0	0	0	0	0	0
Dec. 2	3	4	0	0	8	1	9	4	16	6	1	0	0	0	2	2	2	3	0	0	1	0	0	0	1	0
9	0	6	0	0	5	5	11	4	11	6	0	0	1	0	4	3	7	2	2	0	0	0	0	0	0	0
16	5	4	0	0	4	2	7	2	15	3	2	0	0	0	2	1	7	2	0	0	2	0	0	0	0	0
23	4	9	0	0	7	4	2	0	10	13	0	0	1	0	7	1	8	0	3	0	0	0	0	0	0	0
30	5	4	0	0	5	4	2	2	10	7	2	2	1	0	4	2	8	5	1	0	1	0	0	0	0	0
Total w. and c.	116	299	4		271	148	278	130	507	350	37	5	30	1	76	64	106	107	53	20	40	5	6		3	
Total	415		4		419		408		857		42		31		140		213		73		45		6		3	

[D.]

TABULATED EXHIBIT OF MORTALITY FROM SOME OF THE CHIEF FATAL DISEASES IN THE CITY OF NEW ORLEANS DURING THE FOUR YEARS 1880 TO 1883, INCLUSIVE, BY WEEKS.

1883.

WEEK ENDING	Small-Pox.		Yellow Fever.		Malarial Fever.		Diarrheal Diseases.		Phthisis Pulmonalis.		Diphtheria.		Croup.		Bronchitis.		Pneumonia.		Congestion of Brain.		Scarlatina.		Sun-Stroke.		Measles	
	w.	c.	w.	c.	w	c.	w.	c.	w	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.	w.	c.
Jan. 6	6	5	...	..	6	...	7	2	14	3	1	...	1	...	3	1	6	5	...	2	1	1	...	...	...	...
13	3	10	...	...	2	...	4	3	1	2	1	...	...	...	1	2	9	5	2	1	1	...	...	...	...	...
20	7	18	...	...	4	...	7	6	11	2	...	...	...	...	2	3	12	4	1	...	...	...	...	...	...	...
27	4	9	...	...	2	2	2	6	10	4	1	...	1	...	1	1	4	6	...	...	1	...	...	...	...	...
Feb. 3	12	21	...	...	4	1	6	3	9	8	3	...	1	...	5	4	6	5	1	...	2	...	...	...	...	...
10	13	18	...	...	4	7	3	2	15	5	2	...	..	...	2	2	7	4	...	1	...	...	...	...	...	...
17	10	11	...	...	6	1	...	1	15	16	1	...	...	...	4	1	8	6	1	...	...	...	...	...	...	...
24	10	30	...	...	2	..	3	...	11	2	2	...	...	...	...	...	4	5	1	1	1	1	...	...	...	...
Mar. 3	10	17	...	...	3	...	2	...	7	5	2	...	...	...	1	4	1	3	...	...	2	...	...	...	1	...
10	7	17	...	...	3	3	4	2	14	8	1	..	1	...	1	3	6	6	...	1	1	1	...	...	...	...
17	17	39	...	..	4	5	2	3	13	8	...	1	1	...	2	2	4	5	1	...	...	...	...	...	...	..
24	25	40	...	...	4	3	3	1	13	3	2	..	...	...	3	...	9	7	2	1	1	...	...	...	...	..
31	20	49	...	..	4	4	2	...	15	4	1	...	...	...	2	4	13	6	4	...	2	...	...	...	...	..
April 7	32	54	...	...	2	2	1	1	8	6	..	...	1	...	1	4	4	4	1	...	2	...	...	...	...	..
14	32	45	...	...	5	1	4	...	11	7	1	..	1	...	...	1	4	4	2	1	...	...	...	...	...	..
21	18	28	...	...	1	1	4	3	5	5	1	..	...	...	1	2	3	5	2	...	1	2	...	...	...	..
28	17	28	...	...	3	4	6	...	6	9	1	...	...	...	2	...	7	1	1	4	...	...	...	...	...	..
May 5	14	20	...	...	3	4	3	...	5	6	...	...	...	...	1	1	3	3	...	...	...	...	...	...	...	..
12	13	17	...	...	4	1	5	7	12	6	...	...	...	1	...	2	2	3	..	1	..	...	...	...	1	..
19	28	24	...	...	3	4	8	3	5	6	1	...	1	...	1	1	3	2	1	2	1	...	...	...	...	..
26	21	20	...	..	7	1	10	3	9	7	...	1	...	...	...	2	3	3	3	...	1	...	...	...	1	..
June 2	13	27	...	...	1	3	8	6	11	5	1	...	...	...	4	...	3	3	2	1	...	...	...	...	...	..
9	12	33	...	...	9	2	10	3	9	1	...	...	...	...	2	...	2	2	...	...	...	...	...	...	1	..
16	17	27	...	...	4	2	11	5	5	7	...	...	...	...	...	1	...	2	3	...	2	...	2	...	3	..
23	9	19	...	...	14	1	1	...	9	6	...	...	...	...	1	1	3	2	2	...	1	...	...	...	2	..
30	9	8	...	...	4	7	4	1	12	5	2	..	...	...	1	...	1	1	...	...	...	...	...	...	...	..
July 7	10	7	...	...	3	4	6	1	6	4	2	...	...	...	...	...	...	1	...	1	...	...	...	...	1	..
14	11	6	...	...	4	4	3	1	8	8	1	..	1	...	...	...	...	1	...	3	...	...	1	...	1	..
21	10	13	...	...	7	5	1	4	12	5	1	1	...	...	2	...	...	...	3	...	...	...	...	1	1	..
28	11	10	..	...	12	4	5	3	8	6	1	..	...	...	...	1	2	...	3	1	...	...	...	...	...	..
Aug. 4	4	9	...	...	3	5	8	1	13	10	1	...	...	...	2	1	...	1	2	1	1	...	2	...	...	..
11	6	10	...	...	8	3	3	...	8	8	1	1	1	...	2	...	1	...	5	...	2	...	...	...	1	..
18	12	7	...	...	6	1	1	2	9	5	...	1	...	...	2	...	2	1	3	2	1	...	...	...	...	..
25	5	7	...	..	11	2	6	1	13	6	...	...	...	...	...	1	...	2	2	...	1	...	...	...	...	..
Sept. 1	7	10	...	..	8	3	7	...	3	3	...	...	...	...	1	...	3	1	4	...	...	...	...	...	...	..
8	4	4	...	...	14	3	2	3	7	6	2	...	...	...	3	2	3	...	...	...	...	...	...	...	...	..
15	3	8	...	...	11	3	5	1	10	15	1	...	...	...	2	...	6	..	..	1	...	...	...	...	...	..
22	2	8	...	...	9	6	4	3	13	10	...	1	2	...	...	2	6	1	1	1	1	...	...	...	...	..
29	1	5	...	...	9	7	6	2	6	5	1	2	...	...	2	4	...	...	4	...	...	...	...	...	...	..
Oct. 6	3	3	...	...	20	6	7	4	7	6	...	...	...	...	4	...	3	3	1	1	...	...	...	...	...	..
13	1	2	...	...	8	5	6	2	9	10	1	1	...	...	5	1	...	2	2	...	...	...	...	...	...	..
20	1	2	...	..	10	4	4	2	8	7	1	..	...	...	...	...	2	3	1	...	...	...	...	...	...	..
27	2	4	...	...	8	3	10	4	6	6	...	1	1	...	2	..	2	1	4	...	1	...	...	...	...	..
Nov. 3	...	3	...	...	6	3	5	3	12	10	1	1	1	...	2	1	5	2	2	...	1	...	...	...	...	..
10	4	4	1	...	10	6	15	6	11	14	...	...	...	...	1	1	6	2	2	...	2	...	...	...	...	..
17	1	4	...	..	13	1	15	6	13	9	1	...	...	...	4	4	4	2	1	1	...	...	...	...	...	..
24	7	3	...	...	7	2	7	3	9	7	2	1	1	1	5	2	1	2	4	...	...	...	...	...	...	..
Dec. 1	3	2	...	...	5	3	12	4	11	14	3	...	...	...	5	2	3	1	...	...	1	...	...	...	...	..
8	2	1	...	...	5	1	9	4	6	10	1	...	1	...	11	1	8	2	1	...	...	...	...	...	...	..
15	1	3	...	...	8	..	8	1	12	7	1	...	1	...	2	...	10	7	2	1	..	1	...	...	...	1
22	1	4	...	...	8	3	16	1	5	7	2	...	...	..	1	2	6	4	1	...	.	...	...	...	...	..
29	2	...	...	.	7	5	9	2	12	4	5	...	1	...	1	2	3	4	2	...	1	...	...	...	...	..
31	...	...	...	...	2	...	1	...	4	1	.	...	..	...	...	..	2	2	1	..	.	...	...	...	...	..
Total w. and c.	493	773	1	...	330	151	301	126	505	354	54	12	18	2	100	69	206	146	84	26	3	7	4	1	14	
Total	1266		1		481		427		859		66		20		169		352		110		40		5		1	

[E.]

TABLE SHOWING TOTAL MORTALITY BY WEEKS DURING THE YEARS 1880 TO 1883 INCLUSIVE.

1880.							1881.						
Week Ending.	Mortality.			Rate per 1000.			Week Ending.	Mortality.			Rate per 1000.		
	w.	c.	Total	w.	c.	Total		w.	c.	Total	w.	c.	Total
Jan. 4	76	34	110	25.49	32.14	27.24	Jan. 8	89	41	129	25.25	32.80	27 24
11	55	35	90	18.45	33.09	22.33	15	90	55	145	29.62	50.17	34·90
18	65	32	97	21 15	30.25	24.04	22	61	37	98	20.07	33.75	23·59
25	43	33	76	14.30	31.20	18.82	29	95	47	142	31.26	42.87	34·18
Feb. 1	61	32	93	20.46	30.25	23.03	Feb. 5	68	42	110	22·40	38.31	26·48
8	68	54	122	22 81	51.05	30.22	12	79	39	118	26.00	35.57	28·40
15	72	30	102	24.15	28.36	25.26	19	78	44	122	25.67	40.14	29·37
22	51	37	88	17.11	24.22	21.76	26	82	39	121	26.98	35.58	29·13
29	68	41	109	22.81	38.76	26.99	Mar. 5	55	39	94	18.10	35.58	22·63
Mar. 6	46	36	82	15.43	23.27	20.30	12	93	47	140	30.60	42.87	33·70
13	45	33	78	15.09	31.20	19.31	19	80	41	121	26.33	37.40	29·13
21	54	31	85	18.28	29.30	21.04	26	87	60	147	28.63	54.73	35·39
28	65	44	109	21.15	41.60	26.99	April 2	60	49	109	19.74	44.70	26·24
April 3	77	35	112	25.66	33.09	28.00	9	86	45	131	28.30	41.05	31·53
10	72	28	100	24.15	26.47	24.76	16	71	42	113	23.36	38.31	27·20
17	81	33	114	27.17	31.20	28.22	23	81	32	113	26.65	29.19	27·20
24	69	33	102	22 98	31.20	25.25	30	89	47	136	29.29	42 73	32·74
May 1	76	35	111	25.49	33.09	27.50	May 7	85	52	137	27.97	46.62	32·98
8	74	50	124	25.15	47.23	30.70	14	113	47	160	37.58	42.13	38·51
15	81	45	126	27.17	42.55	31.20	21	102	55	157	33.56	50.17	37·79
22	86	55	141	28.85	52.00	34.92	28	110	55	165	36.20	50.17	39·72
29	88	50	138	29.52	47.23	34.17	June 4	105	63	168	34.55	56.48	40·44
June 5	97	53	150	32.54	50.10	37.14	11	119	51	170	40.12	45.72	39·16
12	118	48	166	39.58	45 34	41.10	18	135	54	189	44 32	48.61	45·47
19	70	44	114	23.48	41.60	28.22	25	136	50	186	44.65	45.01	44.74
26	71	44	115	23.65	41.60	28.48	July 2	79	48	127	25.93	43.21	30.55
July 3	73	39	112	24.98	26 11	27.73	9	92	50	142	30.20	45.01	34.16
10	66	33	99	21.32	31.20	24.51	16	82	43	125	26.92	38.71	30.07
17	68	32	100	22.81	30.25	24.76	23	75	34	109	24.22	30.60	26.22
24	60	33	93	20.63	31.20	23.02	30	97	41	138	31.84	36.91	33.20
31	74	29	76	25.15	27.42	18.28	Aug. 6	53	40	93	17.40	36.01	22.37
Aug. 7	41	48	89	13.96	45.34	21 04	13	73	28	101	23.96	25.20	24.29
14	47	25	72	15.60	23.63	17.33	20	80	43	123	26.27	38.71	20.59
21	71	36	107	23.65	33.27	25.75	27	73	38	111	23.96	34.20	26.77
28	65	37	102	21.15	34.22	24.55	Sept. 3	67	45	112	21.99	40.51	27.66
Sept. 4	62	40	102	20.80	38.30	24.55	10	53	41	94	17.40	36.91	22.61
11	57	33	90	18.64	30.10	21.66	17	55	38	93	18.05	34.20	22.37
18	76	51	127	24.85	46.49	30.57	24	58	41	99	19.04	36.91	23.81
25	72	32	104	23.54	29.19	25.03	Oct. 1	56	43	99	18.38	38.71	23.81
Oct. 2	71	32	103	23.22	29.19	24.79	8	66	35	101	21.67	31.50	24.30
9	65	42	107	21.25	38.31	25.75	15	64	26	90	21.01	23 40	21.65
16	68	28	96	22.23	25.54	23 11	22	77	31	108	25.28	27.91	25.98
23	73	31	104	23.87	28.28	25.03	29	66	45	111	21.67	40.51	26.70
30	89	26	115	29 10	23.71	27.68	Nov. 5	64	29	93	21.01	26.10	22.37
Nov. 6	87	34	121	28.45	31.01	29.12	12	71	60	131	23.31	54.01	31.51
13	86	37	123	28.12	33.75	29.61	19	62	52	114	20.35	46.81	27.42
20	66	46	112	21.58	41.96	26.96	26	61	51	112	20.03	45.91	26.90
27	84	47	131	27.48	42.87	31.53	Dec. 3	84	52	136	27.58	46.81	32 72
Dec. 4	71	27	98	23.22	24.63	23.59	10	69	33	102	22.65	29.70	24.54
11	49	36	85	16.02	32.84	20.46	17	70	37	107	22.98	33.31	25.74
18	79	28	107	25.83	25.54	25.75	24	67	52	119	21.99	46.81	28.63
25	53	45	98	17.33	41.05	23.59	31	65	30	95	21.34	27.00	22.85
31	66	43	109	25.32	40.02	30.78							
Totals	3637	1986	5623	22.96	34.38	26.01	Totals	4127	2279	6406	25.79	38.95	29.31

[E—Continued.]

TABLE SHOWING TOTAL MORTALITY BY WEEKS DURING THE YEARS 1880 TO 1883, INCLUSIVE

1882.							1883.						
Week Ending.	Mortality.			Rate per 1000.			Week Ending.	Mortality.			Rate per 1000.		
	w.	c.	Total	w.	c.	Total		w.	c.	Total	w.	c.	Total
Jan. 7	81	49	130	26.59	44.11	31.27	Jan. 6	116	47	163	37 26	41.27	38.25
14	60	36	96	19.69	32.41	23 09	13	81	39	120	25.74	33.82	27.91
21	61	38	99	20.02	34.21	23 81	20	101	57	158	49.44	36.75	32.10
28	57	50	107	18.71	45.01	25.76	27	63	53	116	20.02	45.97	26.98
Feb. 4	59	39	98	19.37	35.11	23.57	Feb. 3	102	69	171	32.42	59.85	39.77
11	60	28	88	19.69	25 20	21.12	10	93	57	150	29.56	49.44	34.89
18	67	49	116	21.99	44 11	27.98	17	96	51	147	30.51	44.24	34.19
25	70	31	101	22.32	27.90	24.30	24	77	67	144	24.47	58.12	33 49
Mar. 4	64	42	106	21.01	37.81	25.50	Mar. 3	71	53	124	22.57	45.97	28.84
11	59	37	96	19.37	33.31	23.11	10	71	74	145	22.56	64.18	33.72
18	60	54	114	20.02	47.71	27.42	17	80	92	172	25.42	78 80	42.56
25	61	48	109	20.03	43·21	26.22	24	104	75	179	33.05	65.05	41.63
Apr. 1	50	53	103	16.41	47.71	24.78	31	95	93	188	30.19	80.67	43.73
8	69	55	124	22.65	40.51	29.83	Apr. 7	102	94	196	32.42	81.54	45.59
15	69	53	122	22 65	47.71	29.35	14	89	86	175	28.28	74.59	41.05
22	83	56	139	27.25	50.41	33.44	21	81	72	153	25 73	62.45	35.58
29	75	55	130	24.62	49.51	31.27	28	85	70	155	27.01	60.72	35.60
May 6	78	48	126	25.61	43.21	30.31	May 5	65	54	119	20.66	46.84	27.68
13	60	54	114	19.70	48.61	27.42	12	70	65	144	25.11	56.38	33·49
20	79	58	137	25.93	52.21	32.96	19	100	67	167	31.78	58.11	38.84
27	78	68	146	25 61	61 21	35.12	26	103	60	163	32.73	52 04	37.91
June 3	74	60	134	24.29	54.02	32.24	June 2	84	71	155	26.69	61.58	35.60
10	82	51	133	26.92	45 91	31 99	9	90	65	155	28 60	56.38	36.05
17	69	57	126	22.65	51.31	30 31	16	107	69	176	34.00	59.85	45.41
24	92	57	149	30.26	51.31	35.84	23	104	54	158	33.05	46 84	36.75
July 1	76	43	119	24 95	38.71	28 63	30	77	40	117	24 47	26.02	27.21
8	62	40	102	20.35	36 01	24.54	July 7	75	41	116	23.82	35 56	26.98
15	62	43	105	20.35	38.71	25.26	14	79	38	117	25.11	32 96	27.21
22	56	39	95	18.38	35.11	22.85	21	82	58	140	26.06	50.31	32.56
29	78	33	111	25.61	29.71	26.70	28	95	45	140	30.19	39.03	32.56
Aug. 5	59	37	96	19.37	33.31	23.09	Aug. 4	83	55	138	26.38	47.71	32.09
12	49	45	94	16.08	40.51	22 66	11	77	48	125	24.47	41.63	29 07
19	68	36	104	22.32	32.41	25.02	18	74	46	120	23.52	39.90	27 9
26	51	47	98	16.74	42.31	23.57	25	73	43	116	23 20	37.30	26.96
Sep. 2	74	39	113	27.18	24.29	35.11	Sept. 1	63	48	111	20.02	41.64	25.89
9	49	46	95	16.08	41.41	22.85	8	72	37	109	22.88	32.09	25 3
16	42	32	74	13 49	28.09	17.40	15	76	54	130	24.15	46.84	30.2
23	62	35	97	19 91	30.73	22.75	22	86	51	137	27.33	44.24	31 8
30	66	30	96	21.20	26.34	22.51	29	81	57	138	25 74	49.44	32.0
Oct. 7	64	31	95	20.56	27.22	22.23	Oct. 6	92	55	147	21.39	47.71	34.1
14	94	43	137	30.19	37.75	32.13	13	90	45	135	28.66	39 03	31.4
21	61	42	103	19.59	36.87	24.16	20	71	43	114	22.56	37.30	26.5
28	64	46	110	20.56	40.39	25.80	27	84	46	130	26 98	39 90	30.2
Nov. 4	59	47	106	18.98	41.00	24.87	Nov. 3	88	58	146	27 93	52.03	34.1
11	83	36	119	26.66	31.61	27.92	10	114	53	167	36.23	45.97	38.8
18	69	43	112	22.16	37.76	26 28	17	112	51	163	35.59	44.23	37.9
25	76	45	121	24.41	39.51	28.39	24	99	56	155	31.11	48.57	36 0
Dec. 2	85	51	136	27.31	44.77	31.91	Dec. 1	97	50	147	30 83	43 37	34 1
9	84	47	131	26.98	41.27	30 74	8	91	50	141	28.92	43 37	32.7
16	88	38	126	28.27	33.37	29.57	15	96	49	145	30.51	42.50	33.7
23	79	41	120	25.38	36.00	28.14	22	93	44	137	29.55	38.16	31.9
30	84	51	135	26.98	44.78	31.68	29	97	53	150	30.83	45.97	34.4
Total	3582	2340	5922	21.89	39.03	26.45	Total	4552	2971	7523	26.62	47.16	32.

Note 1—The *rate* of mortality at bottom of table is calculated for the entire year independently of t separate weekly reports.

Note 2—The tabulation embraces the entire mortality for the years 1880 and 1881. In the year 1882, o day's mortality is omitted, and in 1883 two days.

Note 3—The rate of mortality for the year 1883 is calculated upon the estimated population, based up the *ratio* of increase between the years 1870 and 1880 by United States census.

MORTALITY OF NEW ORLEANS, LOUISIANA, DURING 1880, 1881, 1882 AND 1883, CLASSIFIED ACCORDING TO DISTRICTS, MONTHS, RACES AND PRINCIPAL DISEASES.

TABLE ILLUSTRATING DEATHS IN THE FIRST DISTRICT, CITY OF NEW ORLEANS, DURING THE YEAR 1880.

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Yellow Fever	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	2
Malarial Fevers	.....	2	3	4	7	6	6	7	13	15	6	5	74
Typhoid Fever	1	.....	.....	1	.....	.....	1	.....	.....	2	2	.....	7
Scarlet Fever	1	1	4	1	.....	3	5	1	.....	1	2	.....	19
Measles	.....	.....	.....	2	8	7	3	.....	.....	.....	.....	.....	20
Small-pox	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Diphtheria	.....	1	1	1	1	2	.....	.....	.....	2	4	1	13
Diarrhœal Diseases	8	2	3	3	10	14	7	6	4	7	4	4	72
Congestion of Brain	2	3	2	3	4	3	3	3	5	6	3	3	40
Convulsions	2	3	3	5	12	6	5	5	3	5	4	2	55
Phthisis Pulmonalis	21	15	27	22	21	17	22	15	6	12	25	19	222
All other causes	94	87	64	77	86	76	63	51	58	68	83	62	869
Total Number Deaths	129	114	107	119	149	134	116	88	89	119	133	96	1393
Number of Deaths. White	86	71	74	74	82	84	79	52	58	78	90	56	884
Number of Deaths. Colored	43	43	33	45	67	50	37	36	31	41	43	40	509
Death rate per 1000 inhabitants per annum. Yellow Fever	.....	.....	.....	.....	.....	.....	0.02	.....	.....	0.02	.....	.....	0.05
Malarial Fever	.....	0.41	0.62	0.83	1 46	1 25	1.25	1.46	2.71	3.13	1.25	1.04	1.28
Phthisis Pulmonalis	4.38	3.13	5 64	4 59	4 38	3.55	4 59	3.13	1.25	2.50	5 22	3.97	3 86
Whites	23.84	19.66	20.49	20.49	22 71	23.26	22.16	14.40	16 10	21.60	24.93	15 51	20 40
Colored	36.52	36 52	28 03	38.22	56.91	42 47	31.43	30.58	26 33	34.83	26.32	33.98	36 10
Total	26.94	23.81	22 35	24.85	31 12	27.99	24 23	18.38	18 59	24.85	27 78	20.05	24.24

Population—White, 57,945; Colored, 14,116. Total, 57,445.

SANITARY CONDITION OF THE FIRST DISTRICT 1880.

OFFICE SANITARY INSPECTOR, FIRST DISTRICT,
NEW ORLEANS, JULY 21, 1880

r. Joseph Jones, President Board of Health:

Sir—In obedience to special instructions, I have the honor to present the following report:

1. The street gutters running from the river front, whenever in the range of the sanitary flushing main, e kept well cleaned, and even those not so flushed have been washed almost daily by copious floods of rain, s a consequence, the general condition of street gutters has been far better than has usually been the case this season of the year.

The gutters of streets in the rear of the Camp street canal, receiving none of the water from the flushing gine, are almost wholly dependent upon the rains and the exertions of the street-cleaning force employed the city, and are therefore particularly liable to become foul whenever the weather is dry.

The gutters of the streets running parallel with the river require manual labor in cleaning, on account of e impracticability of flushing them. On this account it may be stated that all of the gutters parallel with d back of Rampart street would be intolerably filthy and offensive but for the rains.

2. The gutters flushed by the Auxiliary Sanitary Association's engine, carrying matter directly to the rear the city, are those of Calliope, Delord, St. Joseph and Julia streets. Those streets between Felicity and lliope, running from the river front, drain this water into the Camp street head of the Melpomene canal, ndering this formerly offensive sewer perfectly inodorous.

3. The gutters immediately surrounding the Girod-street Cemetery are well flushed, while those on the posite sides of the boundary streets are filthy.

About the Charity Hospital and New Basin, particularly above the latter, the gutters become intensely ul as soon as the rains cease.

4. The total population of the First District, according to the census of 1879, taken by the sanitary offi- rs, is 54,344, and occupies an area divided by streets into 503 squares having an average front of 300 feet. is embraces the whole of the First and Second Wards and the Third Ward to Galvez street.

Within this area are about 125 miles of street gutters, fully sixty-seven miles of which are unusually thy and require manual force to clean them.

The present scavenger force consists of 46 laborers, with 26 carts and drivers. There is per laborer a pro ta of about 1181 of population, and per cart about 2000.

In considering the sanitary management of the First District, it is of importance to take into special ac unt the great obstacle offered in the natural depressions of surface, involving in some instances an area many squares. In these low spots drainage is so imperfect that street gutters are at all times in a stag- nt condition, and would require the constant exertion of a large number of laborers to prevent foul ac mulations.

5. Accompanying this, I present a condensed statement of sanitary work accomplished by the sanitary icers of the Board of Health from April 15 to July 15, 1880.

6. To keep the district in good sanitary condition during the summer months would require a street clean- force of at least 100 men.

7. From the first to the fifteenth of July, there were but forty deaths from all causes in the district. Four these were from fevers—viz: one thypo-malarial, and three congestion of brain. This does not take into count the death from yellow fever of the seaman from the Excelsior, at the Touro Infirmary.

The rate of mortality is decidedly below the general average.

In closing this report, allow me to state that every assistance has been rendered by the Department of Improvements in the sanitary work of this office; and that, according to my observation, the utmost amount of work has been accomplished by the wholly insufficient force employed on the streets. Respectfully submitted,

JOSEPH HOLT, M. D., Sanitary Inspector First District.

MORTALITY SECOND DISTRICT NEW ORLEANS 1880.

The total number of deaths in the Second District during the year was 1115, making an annual ratio of 24.9 per thousand population.

The annual ratio per thousand white population was 22.28. The annual ratio per thousand colored was 31.27.

The greatest number of deaths occurred in the month of June..... 116
The least number of deaths occurred in the month of January..... 73
Mortality from January to June..... 555
Mortality from June to December..... 560
Total deaths from diseases of the respiratory organs..... 267
Of these, consumption..... 168
Total deaths from all fevers..... 90
Total deaths from congestions..... 25

The greatest number of deaths occurred in the Fifth Ward.

A suspicious case of yellow fever on Customhouse street, corner of Franklin, was reported, but on careful examination proved to be a case of hæmorrhagic malarial fever.

TABLE ILLUSTRATING DEATHS IN THE SECOND DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1880.

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Malarial Fevers	0	2	6	5	8	5	2	4	18	5	3	4	
Typhoid Fever	2	2	2	1	0	2	1	1	2	2	1	0	
Scarlet Fever	0	0	1	1	1	1	4	1	0	0	1	2	
Measles	0	0	1	5	7	4	2	1	0	0	0	0	
Diphtheria	0	0	1	0	2	1	1	0	0	4	4	1	
Diarrhœal Diseases	3	1	0	0	4	3	1	2	1	3	2	2	
Congestion of Brain	1	1	0	4	9	7	2	6	10	4	5	10	
Convulsions	0	1	0	1	4	2	2	4	4	1	0	2	
Phthisis Pulmonalis	5	18	12	14	14	18	10	8	16	18	20	15	1
Deaths from all other causes	62	70	51	48	65	73	54	57	55	51	76	53	7
Total number of Deaths	73	95	80	79	114	116	79	84	106	88	112	89	1
Number of Deaths { White	46	57	44	56	71	72	54	51	62	64	79	52	
Number of Deaths { Colored	27	38	36	23	43	44	25	33	44	24	42	37	
Death rate per 1000 Inhabitants per annum. { Malarial Fevers		0.50	1.60	1.30	2.10	1 30	0.50	1.00	4 80	1.30	0.80	1.00	1
Death rate per 1000 Inhabitants per annum. { Phthisis Pulmonalis	1 30	4.80	3.20	3.80	3.80	4 80	2 60	2.20	4.30	4.80	5.30	4.20	3
Death rate per 1000 Inhabitants per annum. { White	17.60	21 80	16.51	21.43	27 16	27.54	20.40	19 51	23.69	24.49	26 74	19.89	22
Death rate per 1000 Inhabitants per annum. { Colored	24.35	34 28	33.47	20 75	38.79	39 69	22.55	29 77	39 69	21 65	27.89	31.57	31
Death rate per 1000 Inhabitants per annum. { Total	19 61	25.52	21 49	21.22	30 62	31 16	21 22	22.56	28.47	23.64	30.08	23 90	24

Still Born, 66. Population: White, 31,368; Colored, 13,301; Total, 45,669.

GUTTERS.

For future reference, an exact and carefully prepared table of the number of miles of gutters in Second District is here presented, which by streets is as follows:

Levee	1	Canal	1
Decatur	1	Customhouse	1
Chartres	2	Bienville	2
Royal	2	Conti	2
Bourbon	2	St. Louis	2
Dauphine	2	Carondelet Walk	2
Burgundy	2	Toulouse	2
Rampart	4	St. Peter	4
Basin	1	Orleans	1
St. Claude	1	St. Ann	1
Franklin	1	Dumain	1
Treme	2	St. Philip	2
Marais	2	Ursulines	2
Villere	2	Hospital	2
Robertson	2	Barracks	2
Claiborne	4	Esplanade	4
Derbigny	2		
Roman	2	Total	50
Prieur	2		
Johnson	2	Grand total of miles in the Second District	98
Galvez	2		
Miro	2		
Tonti	2		
Rochblave	2		
Dorgenois	2		
Broad	2		
Total	50		

REPORT OF W. R. MANDEVILLE, M. D., SANITARY INSPECTOR SECOND DISTRICT.

NEW ORLEANS, December 31, 1880.

Dr. Joseph Jones, President of the Board of Health:

Sir—I have the honor to present the following condensed report of the sanitary work accomplished in the Second District during the year ending with the above date:

LOCATION.

The second municipal district of the city of New Orleans is bounded on the north and northest by Esplanade street and Bayou St. John, and on the south and southwest by Canal street and the new canal. The district extends between these boundaries from the Mississippi River to Lake Pontchartrain, and comprises three divisions, known as the fourth, fifth and sixth wards.

TOPOGRAPHY AND DRAINAGE.

The Second District is renowned for being the most historical part of the Crescent City, since that territory bounded by the Mississippi River, Esplanade, Rampart and Canal streets constitutes the city of New Orleans as originally founded by Bienville. The streets are regularly cut in square blocks, giving to the map of that district the appearance of a chess board. Excepting most of the thoroughfares in the rear of Rampart street, the streets and banquettes of this district are narrower than those of more modern design.

Many of the houses in this part of the city were built before an abundance of light and air and free ventilation were recognized as essentials to perfect health and comfort, but, thanks to their antiquity, are now rapidly falling to ruin and decay, and in their place new ones of more recent design and architectual beauty are being erected with all the comforts now considered so necessary in this progressive age of sanitary science.

The drainage system of this district is very imperfect. Storm and waste water is drained into Lake Pontchartrain, by a number of canals known as Hagan Avenue, Broad, Galvez, Claiborne and Orleans, but these canals are too small and rapidly fill up with mud, and in summer almost completely dry up, making the air redolent with ther foul miasmatic odors.

The drainage machine now in use is far from having the requisite amount of power to carry off the surplus water after having rains, such as visited us this year, and as a consequence the rear portion of the district after a rain resembles a miniature lake for several hours.

It is earnestly urged that these canals be thoroughly deepened and cleaned before the warm season is upon us.

WATER SUPPLY.

Water from the Mississippi River is conveyed by pipes through the district only as far as Claiborne street. Its want is felt beyond this avenue to Broad street, an area of (130) one hundred and thirty square blocks, quite densely inhabited. This supply of water is freely used in all public buildings and private residences, for cleaning purposes, bathing, etc., but its muddy condition renders it objectionable as drinking water.

Rain water preserved in cisterns is generally used for drinking purposes. These cisterns, especially on premises where no hydrant exists, are in the majority of cases so limited in capacity that they are soon emptied when a drouth occurs. Some are in a miserable state of decay, and it would be beneficial to have them repaired or even destroyed.

Wells are found in all parts of the district, and are used principally at dairies and stables for watering stock, and at nurseries for besprinkling plants. The water from these wells is universally considered unhealthy by the inhabitants, and is never used for drinking purposes, except in very rare instances, when no other water is obtainable.

The scarcity of water in the rear of Claiborne street is a just cause of complaint in cases of conflagration, and it would be advisable for the protection of real estate against destruction by fire, to build fire-wells at different points of that section.

The street hydrants in the more central part of the district should be allowed to flow for a couple of hours morning and evening, during the summer months, so as to thoroughly clear the gutters of their filthy accumulations.

PUBLIC BUILDINGS.

The Court-house, Police Stations and Parish Prison are in a fair condition, and during the summer months were frequently inspected.

The authorities in charge of the Parish Prison are doing their utmost to keep the building clean, and the police regulations in regard to cells and yard are excellent. The cells are large but poorly ventilated. The privy system of the prison is that known as the "Rochdale" or barrel system; they are emptied daily.

Two wells 13 feet deep, formerly used as privy vaults, should be filled as soon as possible with river sand.

At the time of last inspection the total number of prisoners was 252; number of white males 93; number white females 29; number colored males 84: number of colored females 46.

TREME AND FRENCH MARKETS.

The condition of these markets is tolerable. The principle cause of complaint lies in their vicinity, where banquettes are obstructed by the fruit and vegetable stand kept most by Sicilians. It is deplorable to verify the fact that this class of people, as a rule, seems to ignore the elements of hygiene. A glance in the interior of their abodes is sufficient to prove this assertion.

The appearance of the vegetable markets could easily be improved. The washing of the banquettes on either side from Ursulines to St Philip would result in rendering them less slippery and dangerous to pedestrians during damp weather. The prompt removal of all garbage should not be neglected.

CEMETERIES.

There are four large cemeteries in the Second District, which are the burial grounds of some of the oldest and most respectable families of this city. The walls and many of the vaults of these cemeteries are in a dilapidated state and require immediate repair. It is especially the case with the graveyard bounded by Customhouse, Claiborne, Bienville and Robertson streets, where also the least shower renders the alleys impracticable since the water, finding no outlet, remains stagnant until evaporated by the rays of the sun. The proper authorities should find a remedy for these defects at once.

REMOVAL AND DISPOSITION OF GARBAGE.

The removal and disposition of street garbage, as actually practiced, has proven to be superior to the old system of depositing the same on vacant lots in the rear of the district.

Some complaints, however, arise about the non-hauling of garbage from the streets. This work should be attended to daily and with regularity, and consist not only in emptying of the receptacles containing the rubbish, but also in the removal of all decaying matter from the streets.

Under this heading can be mentioned the neglected appearance of the gutters on some of the most frequented thoroughfares of the district, such as Royal, Chartres and Rampart streets. St. Philip and Ursulines streets in the neighborhood of the French market have a filthy and repulsive aspect.

SANITATION.

During the past year an immense amount of sanitary work has been accomplished in this district. Several thousand circulars have been distributed to the families residing in its boundaries, instructing them in domestic sanitation, and it is with no small amount of satisfaction that the statement can be made that the people were eager to receive all the knowledge possible in this line.

Disinfectants to the amount of 333½ gallons of copperas and carbolic acid solution, and dry copperas (17,908 lbs), were gratuitously distributed to all those desiring it. This was accomplished by means of a cart conveying it from house to house, accompanied by one of the sanitary officers, thus leaving nothing undone to secure health and cleanliness to the inhabitants of this district.

DAIRIES.

A thorough inspection of all the dairies in this district was made during the summer months, and a detailed report presented to the Board.

Could not some means be adopted by which all milk in this city be first carefully tested as to its purity, etc. ? The adulteration of milk is carried on to a much greater extent than one not thoroughly acquainted with the facts would suppose, and it certainly behooves us as sanitarians and as guardians of the public health, that this important matter receive our earnest attention.

MORTALITY IN THE THIRD DISTRICT, NEW ORLEANS, FOR THE YEAR 1880.

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Malarial Fevers	3	4	.....	4	9	12	11	9	12	6	8	4	8
Typhoid Fever	1	.....	1	2	2	3	2	2	1	1	...	1	1
Scarlet Fever	.....	.....	.....	1	.....	.....	2	2	1	1	2	6	1
Measles	.....	.....	.....	12	17	6	.....	.....	.....	.....	.....	.....	3
Small-pox	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1
Diphtheria	3	2	3	.....	.....	.....	1	5	.....	2	1	3	1
Diarrhœal Diseases	2	3	1	3	2	11	1	4	.....	2	4	3	3
Congestion of Brain	2	2	1	.....	2	2	2	3	2	1	.....	1	1
Convulsions	7	1	3	5	3	3	.....	7	2	1	3	7	1
Phthisis Pulmonalis	10	7	9	11	10	14	9	12	15	11	14	16	1
Deaths from other causes	54	72	74	57	82	84	55	44	54	60	51	70	7
Total Number of Deaths	82	91	92	95	132	135	80	88	87	85	83	111	11
Number { White	56	60	56	79	84	87	45	61	47	59	57	83	7
Deaths. { Colored	26	31	36	16	48	48	35	27	40	26	26	28	3
Death rate per 1000 inhabitants per annum. { Whites	19 92	21.34	19 92	28 10	29.88	30.95	16 00	21.70	16.72	20 99	20 27	29.82	22.
Colored	26.31	31 37	36.43	16.19	48.58	48.58	35.42	27.32	40.48	26.31	26 31	28.33	32
Total ..	21.58	23.95	24.21	35.00	34.74	35.53	21.05	23.16	22.90	52.37	21 84	29.21	25.
Malarial Fevers	.78	1.05	.....	1.05	2 36	3.05	2.89	2.36	3.15	1.57	2 10	1.05	1
Phthisis Pulmonis	2.85	1.84	2.36	2.89	2.63	3.68	1.57	3.15	3.94	2 89	3.68	4.21	2
Still-born Children	8	8	5	8	5	8	4	3	6	4	6	3	

Population of District—White, 33,732; Colored, 11,856. Total, 45,588.

MORTALITY IN THE THIRD DISTRICT FOR THE YEAR 1879.

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
Malarial Fevers	3	2	1	.....	6	4	4	10	10	9	4		
Typhoid Fever	1	....	2	.....	...	1	1	1	2	.....	1	2	
Scarlet Fever	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Measles	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Small-pox	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Diphtheria	3	1	2	2	2	1	....	2	3	3	2	2	
Diarrhœal Diseases	4	.....	2	2	4	5	6	2	1	3	1	2	
Congestion of Brain	2	.....	.....	.....	.....	.....	.....	3	2	.	1	1	
Convusions	1	.	.....	4	2	2	1	6	.....	.	2	4	
Phthisis Pulmonalis	14	13	16	14	5	5	13	10	7	19	8	5	
Deaths from all other causes	68	40	51	53	22	61	56	40	46	48	69	65	
Total number of Deaths	96	56	74	75	74	79	81	74	71	82	88	81	
White	65	36	48	46	46	51	50	46	47	56	62	56	
Colored	31	20	26	29	28	28	31	28	24	26	26	25	
Still-born children	.....	.....	2	1	.....	.....	.....	1	4	4	4	...	

Population of district—White, 33,732; colored, 11,856; total, 45,588.
Death rate per 1000 inhabitants per annum, census of 1880—white, 18.05; colored, 27.25; total, 20.42

REPORT OF W. H. WATKINS, M. D., SANITARY INSPECTOR, THIRD DISTRICT

NEW ORLEANS, LA., December 31, 1880.

Joseph Jones, M. D., President Board of Health, State of Louisiana:

Sir—I have the honor herewith to submit the annual report in regard to sanitation and sanitary regulations exercised in the Third District, for the year 1880.

Having been elected Sanitary Inspector of this district, April 12, 1880, I at once assumed charge of the office vacated by my efficient predecessor, Dr. W. E. Schuppert

The records for the preceding months have been carefully preserved by the sanitary officer, Mr. C. F. Gonzales, and from these, together with the reports of the former Sanitary Inspector, I have been able to fully complete the report for the year.

On the fifteenth of April, Mr. T. C. Will was assigned as sanitary officer of the district. His remarkable energy and high qualifications admirably fitted him for the position, and the methodical exactness which he has exercised reflects great credit on him.

LOCATION AND TOPOGRAPHY.

The Third District of the city of New Orleans is embraced within the following boundaries: Esplanade street, United States Barracks, the Mississippi river and Lake Pontchartrain. The District is subdivided into the Seventh, Eighth and Ninth Wards. The inhabited portion is, however, embraced in a much more limited space, extending back from the river on an average of not more than three-quarters of a mile, and embraces about 800 square acres. Built on alluvial deposit, the whole district is almost level; highest at the river; the slope back to the lake is gradual, and, in the rear of the inhabited portion, swamps exist which are so low as to be continually covered with water.

DRAINAGE.

Surface drainage alone is the mode by which the district is cleared from storm water, and the facilities for carrying this off are inadequate. The canals and gutters in the rear require deepening, and at least another or larger draining machine is required. The only draining machine is that one located on London avenue. The result is, that after a hard rain many of the streets are inundated, though the natural grade is such that the water does not remain long.

PUBLIC BUILDINGS.

A careful inspection of the Public Schools has been made. All were found in good sanitary condition, but the number of pupils in several is so large as not to allow air-space for each. The total number of public schools in the district is twelve, but one, the McDonogh school No. 12, is yet unfinished and will not be occupied before the latter part of January, 1881. The water supply and drainage of each is good. Privy accommodations ample.

Total number of teachers	91
" " pupils—white	3426
" " colored	772
" " male	2226
" " female	1991
Average number of pupils to each teacher	49

The Orphan Asylums of the district are typical institutions of this kind. Care is exercised by those in charge to make each one clean and healthy. There has been little sickness in them, and no contagious disease has been reported.

The Fifth Precinct Police Station, where the Sanitary Inspector's office is located, is in a dilapidated condition; the doors have rotted away, and the plaster is falling from the ceiling. The privy vaults need rebuilding.

There are five public markets in the district. Each is kept in good condition and regularly inspected by the sanitary officers. The private markets have been regularly inspected, and wherever nuisances have been found, they have been abated. This sanitary condition on the average is good.

CEMETERIES.

The three cemeteries located in the district are far removed from the thickly populated areas and present no feature especially objectionable

STREETS AND GUTTERS

The Third District with such an extent of river front, with imperfect drainage and sloping so gradually from the levee to the swamp, presents one of the problems as yet unsolved. How shall the gutters be kept clean? At least forty miles of streets regularly laid out are now to be looked after, and the limited means of the city caused their total neglect during the latter part of the year, where owing to heavy rains necessity demanded that they should receive attention. At the best season of the year careful inspection of street gutters was made by your orders, and in the report made at that time it was truly stated that of eighty miles of gutters quite one-half could be classed as foul or obstructed. The Eighth Ward made the best exhibit, but this was in a great measure due to the fact that in compactness and grading, it is superior to the other wards, and therefore easier to clean with a limited force. Much can be done by the proper authorities, and such work should be commenced by alignment of the gutters, improving the grade and deepening the canals so that a rapid current shall be established.

A limited number of the streets in the district are paved with ballast from ships known as "cobble stones," and are in good repair. The streets not thus paved are in a fearful condition, and for months many of them are impassible to vehicles.

The supply of water from the "water works" of this city is so limited in the lower portion of the district as practically to be of no service in case of drouth or fires.

DAIRIES AND STABLES.

The number of dairies is large, but in many of them only two or three cows are kept. The extensive dairies are located in the extreme rear of the Seventh Ward. They have been carefully inspected and all efforts made to have them kept in good sanitary state. The milk has been frequently tested and its quality found to be excellent. The livery stables are kept clean, and the manure is frequently removed.

PRIVY SYSTEM.

This differs in no respect from that of other districts of the city. It is defective. An inspection revealed the fact that in numerous instances, they were not in conformity to law, and when cleaned soon fill up with sub-soil water, causing them to be always offensive and insanitary. The inspection of 7466 premises showed that only 5743 were found in good condition, 337 required repairing or rebuilding.

The city ordinance in regard to the emptying of these vaults requires that vidangeurs shall perform this work from six o'clock a. m. to six o'clock p. m., and for every vault to be emptied a permit shall be taken out at the office of the Board of Health. This is violated in many instances, and strict watch has been kept by the sanitary officer to prevent such an occurrence in this district. Another cause of complaint against the excavating companies, is that the barrels holding the fæcal matter are not air-tight. A careful inspection of such apparatus used by these companies convinces me that only that form of barrel having an iron top with rubber flanges is calculated to do away with all cause of complaint, on being carried to the "nuisance boat," where such matter is deposited.

The "nuisance boat" is located at a wharf built by the city at the foot of Reynes street. It is well constructed, holds about eighty loads, and since the adoption of the present system of dumping the fæcal matter, no complaints have reached this office. In the summer the boat is towed daily below the city, and its contents emptied into the middle of the Mississippi River. In the winter, owing to the small amount of work performed by the excavating companies, it is emptied but once a week.

POPULATION.

Adopting the United States census of 1880 as substantially correct, we find the Third District has a population as follows:

WARDS.	White Males.	White Females.	Black Males.	Black Females.	Total by Wards.	Total in District.
Seventh Ward	5.989	6.451	5.373	4.317	20.130	.....
Eighth Ward	3.925	4.274	774	905	9.878	.....
Ninth Ward	6.190	6.903	1 197	1.290	15.580	45.588

MORTALITY FOURTH DISTRICT, NEW ORLEANS, 1880.

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Yellow Fever	1	...	...	...	...	...	...	...	...	...	...	...	...
Malarial Fevers	1	2	...	...	1	8	2	3	13	7	3	2	
Typhoid Fever		2	...	...	1	1	.....	2	....	1	1	.....	
Scarlet Fever	....	.....	.....	1	1	1	.....	.....	.....	.....	.....	1	
Measles	....	1	2	1	3	5	1	.....	.....	.....	.....	.....	...
Small-pox	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Diphtheria	2	1	.....	.....	2	.....	4	.....	.....	8	.....	6	
Diarrhœal Diseases	3	.....	1	6	17	13	8	6	8	3	4	2	
Congestion of Brain	.....	1	2	1	1	3	5	1	1	.....	2	1	
Convulsions	6	.....	1	1	3	2	1	4	2	6	.....	2	
Phthisis Pulmonalis	7	15	12	9	6	6	3	9	8	7	16	16	
Deaths from all other causes	22	28	35	28	45	44	26	31	30	43	40	29	
Total number of deaths	44	49	53	48	80	83	50	56	62	70	66	59	
Deaths. Whites	25	32	32	35	62	62	38	32	46	50	50	42	
Deaths. Colored	19	17	21	13	18	21	12	24	16	20	16	17	
Death rate per 1000 inhabitants per annum. Whites	9.79	12.53	12.53	13.71	24.29	24.29	14.88	12.53	18.02	19.59	19.59	16.45	
Death rate per 1000 inhabitants per annum. Colored	32.99	29.52	36 46	22.57	31.25	36.46	20.83	41.67	27.78	34.73	27.78	29.52	
Death rate per 1000 inhabitants per annum. Total	14.06	15.66	16 94	15.34	25.57	26.54	15.98	17.90	17.15	22 37	21.10	18.86	
Malarial Fevers	0 31	0.63	.....	....	0.31	2.55	0.63	0.95	4.15	2 25	0.95	0.63	
Phthisis Pulmonalis	2.23	4.79	3.83	2.87	1.65	1.65	0 95	2.87	2 55	2.23	5.11	5.11	

Population—Whites, 30,625; colored, 6910; total, 37,535.

REPORT OF R. A. BAYLEY, M. D., SANITARY INSPECTOR FOURTH DISTRI

OFFICE SANITARY INSPECTOR, FOURTH DISTRIC
NEW ORLEANS, January 1, 188

Joseph Jones, M D., President Board of Health:

Sir—The following report of sanitary work accomplished in the Fourth District, including health s
tics, etc., during the year ending December 31, 1880, is herewith submitted.

This district is composed of the Tenth and Eleventh Wards. The population of these wards amou
the aggregate to 30,625 whites and 6910 blacks; a sum total of 37,535 persons. The district is thickly s
from the river as far back as Dryades street. Only two of the streets are paved, viz: Tchoupitoula
Magazine streets. Washington street is paved, but only a short distance.

HEALTH.

There was considerable sickness in this district from the beginning of spring to the advent c
weather, but the rate of mortality was small. The death rate per 1000 inhabitants for that time.
February to November, averaged only 20.11. For the whole year, the death rate was 19.18; the whit
ing 16.52, and the blacks as high as 30.96.

The deaths from all causes, commencing with January, gradually reached its maximum in May and June, and then ran up in September to a moderate figure, which was maintained with a slight increase during the last three months of the year. The majority of the deaths in the spring months was due mainly to diarrhœal and malarial diseases, which are so common at this season. The rise of mortality in September was occasioned by many cases of congestive fever proving fatal.

Isolated cases of diptheria and scarlet fever, usually of a malignant type, were reported throughout the year. There was no tendency to spread, except in a local manner, in the cases coming under observation. Several foci of infection of scarlatina back on Jackson street were difficult of eradication. These diseases may extend to serious proportions the present winter, unless checked by energetic sanitation. Fumigation of the rooms, and disinfection of the yards and vaults of infected houses, are done whenever a death or case is reported.

The dengue fever, as a mild but yet extensive disorder, is classed among the remarkable diseases. The community groaned under this *quasi* serious visitation without any *serious* loss of life. This fever lasted about three months, and was only checked by frost in October. Nothing was attempted in the way of sanitation to arrest its rapid progress. Like influenza it swept over the entire city in a very short time. The non-malarial character of this fever is amply proven by the failure of quinine to abridge the average duration of an attack

Malarial fevers were very common, especially in the rear of St. Charles street, during the Spring and Fall months. The condition necessary for the generation of *miasmata* were never more strikingly present in this district, owing to the bad effects of continuous rainy weather on the unpaved mud streets and badly-constructed gutters.

Two cases and a death from hæmorrhagic malarial fever were reported in October, as having occurred in a family residing on Josephine street, between Liberty and Howard streets. These cases were declared of a purely malarial nature by competent authorities. Owing to the idea of yellow fever being associated in the minds of many persons with these cases and the *bare* possibility of danger, the sanitary measures instituted in the former diseases were immediately carried out.

SANITARY CONDITION.

The sanitary condition of this district may be said to be superior in some respects to that of previous years. This is improved by the constant inspection of the yards, drains and vaults of premises, which is not without good and permanent results. The people must be educated in the fundamental principles of sanitary science, as Herbert Spencer would say, before the real benefits of this work can be apparent to all.

As for the streets and gutters, the less said about them the better. To condemn their present sanitary state in too severe language would be to cast odium on the heads of the innocent, perhaps. What could be expected, however, of a street force of only eighteen or twenty men in a district having a superficial area of two and a half or three miles? A hundred men might be able to attend to the streets with credit to the city.

The inspection of the gutters in summer elicited a few items of interest. The parallel or cross-street gutters were the foul ones at that time, in the front or middle sections of St. Charles street; the constant stream of river water in the perpendicular ones keeping the latter washed out. The rank growth of weeds in the parallel gutters in the rear of St. Charles street, acting as nature's purifiers, keeping those drains in a comparatively clean condition. The perpendicular gutters, not so good in front, are ditches, or canals, in the rear of the district. The drainage in these latter gutters was found to admit of a uniform flow of water, gradually slowing up from the river back, when the Auxiliary Association were working at the foot of Felicity street. Above Washington street, with the exception of Toledano street, there is little drainage noticeable back of St. Charles street. The water here has to find an exit by the gutters of the above mentioned streets. The capacity of the perpendicular gutters for drainage purposes may be shown best in figures from estimates taken at the time.

Eighth street in front: Flow of water 350 feet in 5½ minutes.
Eighth street in rear: Flow of water stationary.
Second street in front: Flow of water 350 feet in 5¼ minutes.
Second street in rear: Flow of water 350 feet in 6 minutes.
St. Andrew street in front: Flow of water 350 feet in 4½ minutes.
Josephine street in rear: Flow of water 350 feet in 5 minutes.

There is not much difference, therefore, in the rapidity of the flow of water, between the extreme front and rear of the district, in the average gutters examined.

There must be some difference, however, to prevent stagnation in front, but none worth mentioning. This flatness of grade in the gutters is not calculated to facilitate drainage; it must be corrected before anything else need be attempted. If the sides and bottom of the drains were constructed of stone, the friction of the water would be less, and a more rapid flow result as a consequence.

The scavenger force in the two wards consists of ten or a dozen carts, with the accompanying drivers. This limited number of vehicles is expected (as required by law) to remove the trash, garbage, etc., from more than 7600 premises, between the hours of 7 and 10 a. m.; the undertaking is naturally a signal failure. After the streets became impassable from rains these carts stopped going around. A matter of complaint with residents is the dumping of garbage by these drivers into the bad holes on some streets. Quagmires cannot be filled with such material without the erection of public nuisances.

It is necessary in this report to recapitulate the sanitary evils not yet dwelt on, such as old privy vaults; low yards without drains; tenement houses; low lots, etc. These nuisances come under the control of health ordinances, and are being rapidly abated with time and perseverance.

SANITARY OPERATIONS.

The limited outbreak of yellow fever in 1879 prompted and urged the completion of the inspections and abatement of nuisances at an early date the past year. Another regular officer was assigned to this district in May, and with his extra help the sanitary work was hastened considerably towards completion.

In the month of June, there were more than 5060 copies of the circular No. 9 distributed in this district. They were left at every house by the sanitary officers as far back as St. Denis street, when the supply allowed to this district gave out. This measure was followed not long afterwards by the free delivery of the copperas in the dry state. The copperas disinfectant, in quantities varying from three pounds and upwards (according to size and nature of vaults), was left at every public and private building from the river to St. Denis street; and around the markets in the rear of the district. Ample instruction was given to the occupants of the houses visited, how to dissolve and use the copperas in the vaults, sinks, drains, etc., on the premises. An examination of the privy vaults was included in the above work, and notices were served immediately to abate any nuisance discovered. A saturated solution of copperas, with a strong percentage of carbolic acid added, was kept on hand in the sanitary office during the summer, for the benefit and use of persons living in this portion of the city.

These wise measures emanating from the Board of Health, were productive of incalculable good, in a sanitary point of view. The residents of the district showed their appreciation of them by a hearty and willing co-operation at all times.

Reinspection of premises where yellow fever occurred in 1879 was repeatedly done through the summer. The vaults and drains on them were subjected to thorough disinfection.

The tanks, barrels, hose, etc., belonging to the excavating companies located in the District were made the objects of a special examination and test in August. There was nothing found, however, of an objectionable nature, as the companies use the odorless apparatus as specified in a health ordinance. It is worth mentioning here that, in consequence of the limited number of wagons in the employ of some of these vidangeurs, the emptying of privy vaults is not as rapidly attended to as the nature of the case demands.

HOUSE TO HOUSE INSPECTION.

The regular inspections were over some time in August, but the main portions of the district has been gone over as early as July. This work had been hurried on from the beginning of the year, but not as fast as after the reorganization of the Board of Health in April.

Reinspection of premises was principally attended to during the months of July, August and September. This work is particularly necessary at this time of the year, and in the means of abating many nuisances lying over from a previous inspection.

Inspections and reinspections consist in the careful examination of the yards, drainage-gutters, alleys and privy vaults connected with any premises visited by the sanitary officer. Notices are served afterwards in the statement of nuisances. Much trouble is often experienced in forcing parties is to have their vaults cleaned. This is most likely to be the case when a notice is served within *six or eight* months subsequent to a previous one to the same effect, which is often necessary in badly constructed vaults. The average time for a vault to go uncleaned is ten months or a year. In the case of boarding-houses or asylums it is necessary at least three or four times a year, or even oftener in some instances.

The vaults in this district are usually faulty in construction, and, on that account, soon fill with sub-soil water after being emptied. When a vault fills in this manner a careful disinfection is all that is requisite, unless it overflows into the yard. There is a disparity then between *bad* and *foul* (water) vaults.

Ordinances are necessary to enforce, with any hope of success, the filling of low lots and the construction of drains on premises. These evils are numerous in the district, but difficult of abatement. The two ponds on Tchoupitoulas street, just above Washington street, are happily now being filled. The Board of Health, as in former years, ought to have the right to decide when a lot is properly graded for building.

DAIRIES.

There are as many as 192 premises with cows on them in this district. The total number of animals is reckoned at 522. The dairies are distributed throughout the district, but principally in the front and rear portions. There are not over twenty large dairies in all, the average number of animals kept ranging from one to five.

A personal inspection of the stables was made in the Fall, when they were at their worst in consequence of bad weather. The good, indifferent and bad ones were examined in turn, and advice was given in one instance and an order in another, as the exigencies of any particular case demanded. I was surprised to see the evidences of improvement in many places, as well as a manifest endeavor on the part of the dairymen to comply with the requirements of health and decency. The better class of dairies had good or water-tight flooring in the stalls and drainage gutters and receptacles for the excrementitious material of the cows. There were a limited number of what might be termed filthy dairies examined, where no disposition was shown by the owners of them to keep anything clean. It is for this class of stables that a Health Ordinance, properly worded, is requisite to enforce a strict compliance with law. This is but an instance of a retrograde metamorphosis of human nature, inasmuch as these slovenly people are ignorant of what constitutes cleanliness of either person or premises. In the absence of any law to limit the number of animals to be kept within thickly-settled neighborhoods, or to define the manner of construction of the stables, the sanitary officers are able only to act as in ordinary premises. The matter of the adulteration of milk, like the food on which the animals should be fed, is still beyond the immediate control of the Board of Health.

SHIPPING.

The shipping along the river front was regularly inspected in person every day or so, from the middle of May to the end of September. The captain, or chief officer, of the vessel was interviewed, and a written statement required of him concerning the health of the crew, ports stopped at and sailed from, kind of cargo, etc. The regular printed forms were used in every inspection. Some objections were raised in the beginning, called in question the legality of the examination, but they were easily set aside when fully explained.

No sickness was discovered on any steamship or sailing vessel visited in the summer. The majority of the steamships had sailed from foreign ports between West Indian and Mexican ports and this city came here usually with water-ballast or wine and other like simple cargoes. The crews of these latter vessels are almost invariably acclimated Spaniards or Italians.

Number of steamships	36
Number of ships inspected	15
Total	51

MARKETS.

The principal markets in this district are not in perfect sanitary condition. Complaints have been received of late concerning three out of the whole number of five.

The Saraparu Market has been reported in a dangerous state, the shed at the end towards Rousseau street being shaky and liable to fall down at any time. The roof of the Magazine Market leaks in several places. This has been so for the past six months. The Ninth Street Market is sadly in need of repair. The water-plug stationed here was reported out of order about a year ago. Keller and Second Street Markets are in very good condition.

BONE YARDS.

These establishments for the purpose of rendering and cooking the flesh of dead animals, are situated in the rear of the Claiborne canal, on Washington street. They were reported early in the summer as nuisances in this city, so long as they remained on one of the principal streets and drives in the district. A committee was appointed by the Board of Health to examine and report on them; since which time the matter continues *in statu quo*. I succeeded, with some trouble, in having a lot of hogs removed from these yards. These hogs were being fed on the flesh of dead animals, and sold to butchers at every convenient opportunity. The proprietors of two bone yards were served with peremptory orders in September to cease further carrying on of their business, until such time as they might make application for and receive permits for so doing. Mr. Barbach, owner of a bone-yard No. 1, complied with the notice served on him, and is no longer to my knowledge pursuing his business. Mr. Kolwe, owner of bone-yard No. 2, got an injunction out immediately in one of the courts and has continued working. The difference between the two establishment is decided, and in favor of the one owned by Mr. Kolwe. The latter party uses steam altogether to cut o

he carcasses of the animals, which are placed in cisterns for that purpose ; the former party makes use of plain iron boiler, in which the animals are imperfectly covered over during the boiling process. Mr. Barach is willing to move off Washington street, and put up steam works in the extreme rear of the Sixth District. Mr. Kolwe, having steam works already, is now testing in the courts the question of the eligibility of the location. These cases demand the early action of your honorable body.

PUBLIC SCHOOLS.

These institutions of learning were inspected just before the holidays. There are eleven of them in the district for the children of the white and colored residents separately.

The schools were found about in the same condition as when reported on a detail a year ago. I thought proper, therefore, to omit the tables usually appended to this report. I would call attention, moreover to the general unsanitary condition of the new Dryades street school for colored children. The yard and building are not as good as the ones in use last year.

MORTALITY FIFTH DISTRICT NEW ORLEANS, 1880.

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August	September.	October.	November.	December.	Total.
Malarial Fevers	....	....	....	....	....	1	....	....	.	1	....	....	2
Measles	....	....	....	....	3	....	....	....	....	....	....	....	3
Diphtheria	....	....	....	1	....	4	....	....	....	1	....	1	7
Diarrhœal Diseases	....	....	....	....	....	1	....	....	....	....	....	....	1
Congestion of Brain	....	....	....	....	....	1	....	1	....	1	....	2	5
Convulsions	1	....	....	2	....	1	2	1	....	....	1	....	8
Phthisis Pulmonalis	1	....	3	1	1	2	....	4	3	1	5	4	25
Deaths from all other causes.	7	6	8	6	16	10	11	3	7	6	6	5	91
Total number of Deaths	9	6	11	10	20	20	13	9	10	10	12	12	142
Number of Deaths. White	5	3	6	8	7	16	9	6	7	6	9	6	88
Number of Deaths. Colored	4	3	5	2	13	4	4	3	3	4	3	6	54
Death rate per 1000 Inhabitants per annum. Malarial Fever.	....	....	....	....	....	1.04	....	....	....	1.04	....	....	0.22
Death rate per 1000 Inhabitants per annum. Phthisis Pulmonalis.	1.04	....	4.01	1.04	1.04	2.08	....	5.15	4.01	1.04	6.20	6.09	2.82
Death rate per 1000 Inhabitants per annum. Whites	12.01	7.03	14.05	19.03	16.09	38.04	21.01	14.05	16.09	14.05	21.01	14.05	17.52
Death rate per 1000 Inhabitants per annum. Colored	10.07	9.06	15.08	6.05	40.75	12.07	12.07	9.06	9.06	12.07	9.06	18.02	14.00
Death rate per 1000 Inhabitants per annum. Total	....	....	....	....	....	....	....	....	.	....	....	....	16.10

Population—White, 5021. Colored, 3856. Total, 8857.
Death Rate per 1000 Inhabitants per Annum—White, 9.93; Colored, 14.00. Total, 16.00.

TABLE SHOWING THE SANITARY CENSUS OF THE FIFTH DISTRICT (ALGIERS) DURING THE YEAR 1880.

WHITE.

Total population	5,021
Natives of New Orleans	2,603
Born in other States or foreign countries	2,418
Male	2,993
Female	2,028
Adults	3,243
Children	1,778
Vaccinated	3,904
Unvaccinated	1,117

BLACK AND COLORED.

Total population	3,835
Natives of New Orleans	1,992
Born in other States or foreing countries	1,843
Male	1,631
Female	2,204

TOTAL POPULATION.

White, black and colored	8,856

Table showing the number of inspections and reinspections made in the Fifth District (Algiers) during the year 1880:

REPORT OF EUG. J. MIOTON, M. D., SANITARY INSPECTOR FIFTH DISTRICT.

OFFICE SANITARY INSPECTOR FIFTH DISTRICT.
NEW ORLEANS, LA. January 1, 1881.

Joseph Jones, M. D., President Board of Health.

Sir—The following report of sanitary operations performed in this district, including statistics, etc., during the year ending December 31, 1880, is respectfully submitted.

Having entered on duty April 11, 1880, I make use of the records preserved in the office, and particularly the monthly reports of my worthy and able predecessor, Doctor J. H. Magruder, to complete necessary material for a full statement of the year's sanitary work.

TOPOGRAPHY.

The Fifth District, which is composed of Algiers, Tunisburg, McDonoghville, Freetown and Gretna, is situated on the right bank of Harvey's canal, opposite Carrollton, to the limits of Tunisburg opposite Chalmette (battle grounds), and occupies an area of fourteen miles in length by half a mile in depth.

As is easily seen, the Fifth District is probably one of the largest of the city, although its population is only (14,000) fourteen thousand inhabitants.

HEALTH.

It is most gratifying to state that the amount of sickness and the mortality that have occurred, when compared with the census of the district, will show the health of the community to have been excellent. Only one hundred and forty-two (142) deaths have occurred during the past year in Algiers out of a population of eight thousand eight hundred and fifty-six (8856) inhabitants.

Not a single case of yellow fever nor small-pox has been recorded in the district for the year 1880. The exanthemata were exceptionally mild; the malarial fevers and dengue, which prevailed throughout the summer months, were also of a mild type, there being only three deaths of malarial fevers and not a single one from dengue.

SANITATION.

The almost total immunity of the Fifth District from all contagious or infectious diseases during the year which has just elapsed, can, I believe, be fairly and justly attributed to the speedy and energetic manner with which the Board of Health's instructions concerning house to house inspections, the free distribution of *disinfectants* (copperas and carbolic acid), the abatement of all nuisances, the special inspection of all the sea-faring vessels landing within the limits of the district, have been carried out. From April to the latter part of October, over 15 barrels of sulphate of iron and over 40 gallons of pure carbolic acid (Calvert's No. 5), have been freely and gratuitously distributed to the people of the district. All the premises were cleaned, fumigated and disinfected; the bed-clothes and the patient's wardrobe were also treated in the same manner.

PUBLIC SCHOOLS.

The public schools, two in number, McDonogh Nos. 4 and 5, were inspected several times during the past year, and their sanitary condition was made the object of careful note. Both buildings are comparatively new, having been completed in 1875; the rooms are spacious, well ventilated and kept clean. Some of the rooms in these schools are quite crowded, and I presume are mroe so now, the number of pupils having increased since these particulars have been obtained. The privy accommodations and play-grounds are amply sufficient, and are kept in a very commendable manner.

VACCINATION.

Although Tuesday and Thursday in each week, from 11 to 1 p. m., were set apart for a gratuitous vaccination, only three applicants were vaccinated in this office during the year, showing a very deplorable indifference on the part of those who are most interested.

INSPECTION OF SHIPS.

In accordance with the sanitary rules, adopted and approved by the Board of Health of the State of Louisiana on April 22d, 1880, sixty-seven 67) ships were inspected by me from May to October. Of these vessels twenty-four (24) had sailed from Havana and Florida Keys, one (1) from Vera Cruz and forty-two (42) from healthy ports.

The sanitary condition of the vessels, crews and passengers was in all instances found excellent.

The most cordial thanks are here tendered to the officers of the Morgan line of steamers for their politeness and courtesy towards my sanitary police officers and myself.

BARK EXCELSIOR.

On the seventeenth of August, 1880, arrived from Quarantine Station the Swedish bark Excelsior, Captain Bjorkgren. The bark landed at "Wallace Wood's powder wharf," Tunisburg, Fifth District (opposite the abattoirs. I immediately repaired on board and officially took charge of her. According to the instructions I had received from the Board of Health; I placed permanently on board my detailed officer. Mr James Nowell, with the strict order of allowing no communication from land without a written permit from the President of the State Board of Health. This rule was rigidly carried out, and during all the stay of said bark in port, there were admitted on her those only who were employed in loading the vessel, and who had been previously examined by me and found to be acclimated. I made it my duty to visit the bark twice daily, morning and evening. Two (2) cases of dengue, both ending in recovery, occurred on the bark, which cases were reported at once. The honorable President of the Board of Health, Doctor Joseph Jones saw both patients and confirmed my diagnosis. A light purgative and a few grains of quinine were administered, and the fever readily subsided.

The bark "Excelsior" left for Bayonne, France, on the eleventh day of September, 1880, loaded with grain.

The wise and prudent measures, rigidly enforced in this case by the State Board of Health, cannot be too highly praised, and all those who know and appreciate the delicate position of the board at that particular moment will acknowledge the wisdom of the course pursued on this occasion.

DRAINAGE.

The drainage of this district is very defective. The portion lying between the river and Market street is well drained, but back of that street there is no sewerage at all; as a natural consequence, the rear of the district is overflowed after each heavy rain, and remains so for days until the water is absorbed or evaporated. This complete lack of drainage could be remedied at very little expense by opening an outlet to the swamps. The above remarks will show that the streets must be, and are, in a deplorable condition; although, in justice to the Street Commissioner, I must say that much has been done of late for their improvement.

NUISANCE BOAT.

The most urgent and pressing want of the Fifth District for the present is, most assuredly, a nuisance boat. The ground used as a place of deposit for all kinds of garbage is situated in a thickly-settled part of the district, is a source of danger and annoyance for those living in the vicinity, and a disgrace to any community. I have time and again complained of the state of affairs, but vainly so far. I earnestly hope that the Board of Health will take the necessary steps to secure a nuisance wharf and a garbage boat for the district.

MARKETS.

The markets of the district have been inspected regularly every week throughout the year, and have always been found in a clean and irreprovable condition. Not a single complaint was ever made against them during the whole year nor has any objectionable article of food ever seen or offered for sale.

DAIRIES.

There are from twenty to twenty-five dairies in the district, which have been regularly inspected during the year, at intervals of one and two months, and cleanliness of the premises have been carefully enforced. The condition of the dairy buildings was especially examined, and with a few exceptions—which were made the object of special remonstrance—they were found to be kept clean; the cows looked healthy and in good condition. Quite a number of persons keep from one to three cows for family use, but no complaint has ever been made against them.

SANITARY POLICE.

It is my pleasant duty to bear testimony to the perfect efficiency of Messrs. Henry Labarre and James Nowell. I must here state to their praise that they are well qualified for the position, attentive to duty, prompt in action, and that they neglect nothing that can promote the health of the district.

POLICE STATION.

The Eighth Precinct Police Station, in charge of Sergeant J. J. Pujol, is always kept clean and in the best sanitary condition.

MORTALITY SIXTH DISTRICT, NEW ORLEANS, 1880.

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Yellow Fever													
Malarial Fevers				1	1			1	3	1	3		10
Typhoid Fever	1	1		1							1	2	6
Scarlet Fever					1	1						1	3
Measles					4	1	1						6
Small-pox													
Diphtheria				1	1	1				3	1		7
Diarrhœal Diseases					1			2	2	1		1	7
Congestion of Brain		1			1				1				3
Convulsions		1	1		3	3	1	3	5		2		19
Phthisis Pulmonalis	4	3	4	2	6	2	3					2	29
Deaths from other diseases	25	16	9	20	22	20	20	23	21	2[illegible]	19	22	230
Total Number of Deaths	30	22	14	25	40	28	25	29	32	3[illegible]	26	28	329
Deaths. White	21	9	4	19	29	21	18	18	22	1[illegible]	12	17	196
Deaths. Colored	9	13	10	6	11	7	7	11	10	1[illegible]	14	11	123
Death rate per 1000 inhabitants per annum. Whites	21 08	9.03	4.01	19.10	29.11	21 08	18 07	18 07	22.09	16.0[illegible]	2 04	17.06	16 40
Colored	26.48	38.08	29.42	17.65	32.36	20.59	20.59	32.36	29.42	41.19	40.19	32.30	30.16
Total	22.45	16.47	10 18	18.71	29.94	20.96	18.71	21.71	22.93	22.45	19 46	20 96	20.52
Yellow Fever													
Malarial Fevers				0.64	0.64			0.74	2.24	0.74	2.24		0.60
Phthisis Pulmonalis	2.99	2.24	2.90	1.49	4 49	1.49	2.24			2.24		1.49	1.80

Still-born, 13.
Population—Whites, 11,951; colored, 4078; total, 16,029.

REPORTS OF W. H. CARSON, M. D., SANITARY INSPECTOR SIXTH AND SEVENTH DISTRICTS—SIXTH DISTRICT.

OFFICE OF SANITARY INSPECTOR, SIXTH DISTRICT,
NEW ORLEANS, December 31, 1880.

To Joseph Jones, M. D., President Board of Health, State of Louisiana?

Sir—I have the honor to submit the following summary report of the operations of this office, and other affairs of importance, as connected with the sanitary condition of the Sixth District, of this city, for the year 1880:

HEALTH.

Throughout the year this district has remained remarkably healthy. With the exception of a visit from the benign dengue fever in the later months of the year, and with but few cases of contagious diseases, the health of the district has been but slightly disturbed, the death-rate falling in the month of March as low as four per cent per thousand.

The rate of mortality, with a population of over sixteen thousand, speaks unusually well for the general good health of the district.

Not even a *suspicious* case of yellow fever during the year, and the one case occurring in September of last year (1879) the premises were repeatedly disinfected and cleansed, inside and out, painted, white-washed, water-closets emptied, and other sanitary measures incident to prevention duty attended to.

In connection with my article on the health of the Sixth District, I have prepared a tableau of mortuary statistics, showing the number the cause of death, with the per centage per thousand in the district for the last year.

I believe that the various forms of malarial fever, at times prevalent in this district, could be decidedly lessened, if not absolutely abolished, if the benefits of proper scientific drainage were in force. Many localities in the district have but little or no drainage, and it is scarcely to be wondered at that, after the rainy season, with the neighboring fields flooded with water at some localities, and saturated throughout, and with the aid of a semi-tropical sun, the powerful agents in the production of miasmatic fevers, if not of many other more pernicious diseases, that the various types of malarial fever prevail.

DRAINAGE.

No efforts have been made during the past year as to improvement of drainage in the district. That the matter requires attention, and that at an early date, is indisputable.

The continous and heavy rains for the past four or five months have rendered the roads and highways impassable, and large drifts from the roadway have, in many instances, clogged the drainage on either side of the roadbed, and in many instances resulting in the formation of quite extensive pools of water, stagnant and foul smelling.

I cannot but again refer especially to the section between Toledano and Delachaise streets. This locality and its great drainage deficiency has been repeatedly laid before the authorities, but without avail: no remedial action has been attempted. In this section referred to, heavy rains will keep the rear of the district in overflow for many weeks, and even at times many months.

WATER SUPPLY.

If the district is sadly deficient in drainage requirements, the same may be said of its artificial water supply. No extension of water-mains has as yet been made beyond Toledano street, and its absence is made manifest in many ways, as it refers to the furtherance of sanitary measures.

Sunken wells still continue to be the main resource of the inhabitants of the district, and with the addition of their wooden cisterns furnish sufficient grounds for suspicion as to the purity and properties of their water for drinking purposes.

With not a hydrant in the district, and depending upon their supply of water from their cisterns and wells, it is almost impossible that the desired cleanliness and measures of a sanitary nature could be systematically attended to.

PUBLIC BUILDINGS.

The public buildings in the District number twenty-six (26); this includes public schools, churches, asylums, a police station and a market,

All of these buildings have been the subject of inspection during the year. The public schools, according to the usual custom, have received a most thorough sanitary investigation, and it is my pleasure to state that, without exception, they presented a most satisfactory condition.

The Jefferson Market, located at the corner of Magazine and Berlin streets, is the principal and only market in the district.

No complaint can be offered as to its sanitary condition. On the contrary, cleanliness is the rule, and on no one occasion have I had to take measures to prevent the sale of tainted meat.

DAIRIES.

Early in the month of September all the dairies of the Sixth District, numbering eighty-five (85) received a most thorough inspection, an inspection not only devoted to the dairy proper, stock, etc., but also the neighboring premises and outbuildings, and all was exceedingly satisfactory.

This condition is in marked contrast to that noted in my annual report of the year previous (1879), at which period but little time or attention was devoted by dairyman to many of the most simple, yet important hygenic requirements.

The inspection of the stock proved them to be in the best possible condition of health; milk-pails, cans and the other attachments incident to the business were observed to be in an exceedingly clear condition.

It is with much satisfaction that I embrace the opportunity to present such a deserving and industrious class in a more enviable light than that contained in my report on this subject for the previous year (1879

PRIVY SYSTEM.

The pernicious privy system, with its leaky, ill-constructed and foul smelling vaults, yet continue to exist and flourish; no change, no improvement, but the same in character and build as used generations back of the present.

In this district this unhealthy and obnoxious condition is probably not so prominent, or its unquestionable deleterious effects, to any great degree, so noticeable, from the fact that the district occupies an extensive area in proportion to its population.

Yet in the more thickly settled and populated sections, the source of many of the so-called filth diseases, this privy system in vogue is not without just and almost positive suspicion.

This is a subject of the utmost vital importance to every resident of this city, for the obnoxious system is not confined to any one district, and it is most sincerely predicted that ere another decade this most uncivilized and abhorent privy system, now in use, will have been abolished without even a vestige of its former residence.

MORTALITY SEVENTH DISTRICT, NEW ORLEANS, 1880.

DISEASES.		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Yellow Fever														
Malarial Fevers										2				2
Typhoid Fever														
Scarlet Fever														
Measles														
Small-pox														
Diphtheria		1										1		2
Diarrhœal Diseases		1				1				1		1		4
Congestion of Brain						1					1			2
Convulsions					3			1					1	5
Phthisis Pulmonalis				3	1		1					3	1	9
Deaths from all other causes		8	14	4	12	10	8	10	9	9	8	4	8	104
Total Number Deaths		10	14	7	16	12	9	11	9	12	9	9	10	128
Number Deaths.	White	6	6	2	8	7	4	4	3	6	8	5	3	62
	Colored	4	8	5	8	5	5	7	6	6	1	4	7	66
Death rate per 1000 Inhabitants per annum.	Whites	23.13	23.13	7.71	30.84	26.99	15.42	15.42	11.56	23.13	31.16	19.28	11.56	19.9
	Colored	15.36	30.72	19.20	30.72	19.20	19.20	26.88	23.04	23.04	30.72	15.36	26.88	21.1
	Total	19.27	26.93	13.47	36.78	23.08	17.31	21.16	17.31	23.08	17.31	17.31	19.27	20.5
	Yellow Fever													
	Malarial Fevers									3.84				0.3
	Phthisis Pulmonalis			5.77	1.94							5.77	1.94	1.4

Still-born, 5.

Population—Whites, 3125; Colored, 3112. Total, 6237.

OFFICE OF SANITARY INSPECTOR, SEVENTH DISTRICT,
NEW ORLEANS, December 31, 1880.

o Joseph Jones, M. D., President Board of Health State of Louisiana:

Sir—I have the honor to submit the following summary report, with its accompanying comments, of the nitary work performed throughout the year 1880 in the Seventh District of this city.

HEALTH.

The condition of health generally has not materially differed for the past few years.
It is worthy of notice that in the population of the district, numbering in the total six thousand two hun- ed and thirty seven (6237)—U. S. census, 1880—the percentage of mortality attending the colored race is excess of that of the whites.
The two races are rather evenly divided in population, the whites numbering 3112 and the colored 25. The deaths number in the former 62, and in the latter 66.
Notwithstanding the heavy and persistent rains of the fall season, types of malarial fever did not present increase, though diphtheria and intestinal diseases were prevalent.
This district, in company with the neighboring and lower district, the Sixth, had each a case of yellow ver to record against them for 1879. No case or anything even suspicious appeared throughout the past ar, 1880.
The premises wherein the death occurred, and above referred to, received the same careful attention in e way of disinfaction and other preventive measures that its fellow in the Sixth District received.
In great part the good health of the district is to be attributed to the better drainage attending this strict than that of many of the others, its mean elevation being about fourteen inches over and above at of the First and Second Districts.

PUBLIC BUILDINGS.

The public buildings in the Seventh District number in all twenty-one, sub-divided as follows: Twelve urches, two fire-engine houses, one court house, a jail building, police station, market and three public hools.
These various buildings have been duly inspected during the year, and with the exception of the court use, jail and police station, were found to be in a satisfactory sanitary condition; the court house has en long in need of repair, and the neglect to attend to the same is sadly affecting the appearance and efulness of the building. A comparative small outlay at the present time, would unquestionably save to e city a considerable outlay of money.
If the court house is in bad condition, what must be said of the jail and police station?
The jail, a brick building of two stories, and without the slighest pretense to sanitary requirements in its chitecture, is literally falling to pieces; new joists are wanted, the floors are rotten and wan ing in many aces, the stair-way rickety and unsafe, many of the prison cells have had to be abandoned, no longer be- inhabitable or secure for confinement of the prisoners, and in toto the building is but a shell, and a most cidedly unhealthy one, even admitting that its use is confined only to the criminal classes.
It is estimated that over one hundred barrels of bat manure were removed last September, the accumu- tion of years, leaving yet in great numbers the source of the annoyance.
Various grand juries in their reports have called attention to the digraceful condition of this building d its present unfitness for the confinement of criminals, and surely it is about time that some attention s devoted to it.

PRIVY SYSTEM.

Though the privy system in vogue in the Seventh District, and I believe confined to this one district is ther simple in character and of primeval origin, it consisting of an excavation in the soil some four to six t square and over which is placed a light wooden enclosure easily movable, I earnestly believe that but le of the bad unhealthy effects are produced which are assigned and now generally accepted, to the brick, l cemented and stationary vaults of the other districts.
For when this trench is no longer serviceable, the contents are disinfected, earth is thrown in covering e space in use completely, and the house is moved to another spot. The localities for erecting these tem- rary buildings are selected as far from the dwelling as possible, consequently the inmates are decidedly re fr e than those residing in the more densely populated districts of the city, where the closet is per- nently built, and in the majority of cases forming part of the main building.
do not desire to have it understood that this character of vault and the system described, applies to all the residences in the district, for such is not the case, as there are localities in which it would be imprac- able and deleterious to the public health.

MARKETS.

One market centrally located, supplies the wants of the district in this respect; the meat sold is unusually od, and cleanliness is an ever present feature of the building.

DAIRIES.

The dairies are extremely numerous in this district, numbering over fifty, the majority of which are lo ed on Carrollton avenue.
They received a careful visit and inspection in the early part of September, and but small complaint can found against them; they are generally clean and out-buildings in good order.

MORTALITY.

The mortality of the district during the past year has not been great, the total number of deaths being hundred and twenty-eight (128), a death-rate of 20.52 per thousand.
Since 1877 not a death from small-pox has occurred in the district.
have prepared a tabulated statement of the mortality of the district for the year, in which is shown all deaths from the principal diseases, showing the per centage for each of the months of the year.

COMPARATIVE RATES OF MORTALITY IN NEW ORLEANS DURING THE YEAR 1880, AND IN THE PRECEDING YEARS —SANITARY MEASURES NECESSARY TO THE HEALTH OF NEW ORLEANS—MORTUARY STATISTICS.

The total deaths from all causes in the city of New Orleans during the year 1880, numbered 5623, and the death rate per 1000 inhabitants was 25.98.

With the exception of two years (1827 and 1879) the death rate of 1880 was lower than that of any year since 1787, of which any records have been preserved.

In 1827, the death rate was 24.56 per 1000 and in 1879, 23.94 per 1000.

It is of the highest importance that a general view of the mortuary statistics of New Orleans should be presented, in order that the effects of sanitary and quarantine measures should be clearly defined. It should be shown by the past and present mortuary records whether the death rate per 1000 inhabitants be decreasing or increasing; whether certain diseases are increasing or diminishing in fatality, and whether differences exist in the rates of mortality amongst the different races which compose the population of New Orleans.

In order to throw light upon these important questions, the following comprehensive statement of the mortality statistics of New Orleans with the accompanying charts have been prepared:

The tabular view of the mortuary statistics of New Orleans, contains the following tables enumerated in regular order as they have been placed upon the chart:

(*a*). *Table illustrating the relations of the population of New Orleans, to the total mortality from all causes, during a period of ninety-four years.*

(*b*). *Table illustrating deaths and death rate from all causes and from yellow fever in the city of New Orleans, during a period of sixty-four years.*

(*c*). *Table illustrating the mortality from some of the principal diseases and total mortality, together with the death rate per* 1000 *inhabitants of the different districts of New Orleans, for the year* 1880.

(*d*). *Census of the State of Louisiana, from the tenth census of the United States*, 1880.

(*e*). *Comparative tables of mortality by months, during the twelve years*, 1869 *to* 1880, *showing deaths from some of the principal diseases; total number of deaths according to race and color, and death rate per annum.*

(*f*). *Table showing deaths diarrhœal diseases, by months during the twelve years* 1869–1880 *inclusive.*

(*g*). *Table showing deaths from phthisis pulmonalis, during twelve years* 1869–1880 *inclusive.*

(*h*). *Table showing deaths from malarial fevers by months, during twelve years* 1869–1880.

(*i*). *Deaths in the Charity Hospital, City of New Orleans, during the year* 18[illegible]0.

From the preceding data, as well as from the vital statistics and meteorlogical records of this city, the accompanying *charts have been prepared, illustrating the increase of population in the city of New Orleans, during a period of ninety-four years, together with the total mortality for each year, and the death rate per* 1000 *inhabitants per annum, also deaths from yellow fever, mean maximum and minimum temperature and rain fall for a number of years.*

Without, at the present moment, entering into an exhaustive discussion of the data recorded in the accompanying tables and charts, the following points of general interest may be noted:

1. It will be observed that the maximum death rate per 1000 inhabitants was attained in the year 1832, 147.01 of every 1000 inhabitants of New Orleans died. In that year (1832) both cholera and yellow fever prevailed as epidemics.

The next highest death-rate was in the memorable year 1853, when the mortality per 1000 inhabitants was 102.42, and the deaths from yellow fever alone caused nearly one half of the total mortality—namely, 7849 out of 15,787 deaths from all causes, or 50.9[illegible] per 1000 inhabitants.

The year 1878 will be distinguished by the diffusion of yellow fever over a considerable area and by the wide spread alarm excited in the Valley of the Mississippi by the ravages of this pestilence. The rate of mortality, however, in 1878 was less than one half that of 1853, being 50.70 per 1000 inhabitants from all causes, and 19.20 from yellow fever; and it was only a little more than one-third that of 1832; and it was exceeded by that of 1787, 1796, 1810, 1811, 1815, 1817, 1819, 1820, 1822, 1825, 1829, 1832, 1833, 1834, 1835, 1837, 1839, 1841, 1844, 1847, 1848, 1850, 1851, 1852, 1853, 1854, 1855, 1858 and 1867.

2. There has been an evident decline in the death-rate of New Orleans during the past twenty years—1860-1880. Of course we do not in this statement fail to note the high death-rate (55.57) of 1867, caused by cholera and yellow fever; of 1873 (40.19) and of 1878 (50.70), embraced to the period 1860--1880. The decline of the mortality rate during the period specified (1860-1880 is shown by the oscillations of the heavy black line on the chart, which represents the death-rate per 1000 inhabitants per annum from all causes.

The same fact is also illustrated by the following statement of the years, presenting the lowest death-rate per 1000 inhabitants in New Orleans during the past ninety-four years: 1812, 32.50 , 1816, 27.93 ; 1821, 39.57 ; 1826, 30.61 ; 1827, 24.56 ; 1828, 32.89 : 1831, 36.71 ; 1838, (36.77 ; 1840, 39.11 ; 1845, 31.17 ; 1856, 35.24 ; 1857, 34.07 ; 1861, 33.97 ; 1862, 36.10 ; 1868, 28.96 ; 1869, 29.79 ; 1870, 36.26 ; 1871, 31.24 ; 1872, 33.54 ; 1874, 35.71 ; 1875, 32.05 ; 1876, 32.39 ; 1877, 34.32 ; 1879, 23.94 ; 1880, 25.98.

This decline in the mortality rate may be referred to several causes: (*a.*) The stationary condition of the population during the period specified (1860-1880), as shown by the line in the chart representing the increase of population in New Orleans during the past 94 years. It is clearly shown upon the chart that the periods characterized by the highest death-rates were precisely those periods in which the city increased most rapidly by additions from surrounding States and foreign countries; (*b.*) the relative preponderance during these latter years of a native-born and acclimated population ; (*c.*) the diminution of the number of seamen entering this port, on account of the substitution of large iron steamships for wooden sailing vessels ; (*d.*) the institution of more rigid quarantine regulations and measures ; (*e.*) increased drainage in the rear portions of the city ; (*f.*) certain sanitary measures, as the cleansing and disinfection of privies and the removal from the city limits of night soil and garbage.

3. As far as the statistics recorded in these tables extend, they tend to sustain the view that the establishment of quarantine at the mouth of tho Mississippi and at the Rigolets and on the Atchafalaya by the State of Louisiana, has tendered to diminish the frequency of yellow fever epidemics ; thus from the establishment of the quarantine in 1855 to the end of 1880 (25 years) there have been but three epidemics of yellow fever of any magnitude, namely : in 1858, 1867 and 1878 ; whilst in the preceding 39 years (1817-1855) no less than 19 severe visitations of yellow fever have been recorded.

4. During the past seven years (that is during the period in which we have data for the calculation)the death rate has almost invariably been higher amongst the colored population than amongst the whites. The result is at variance with the popular opinion that in tropical and semi-tropical cities the black race enjoy a greater immunity from diseases, and especially from the various forms of fever than the white race. The increased rate of mortality amongst the blacks may be referred to such causes as : (*a.*) improvidence in living ; irregular habits ; poor diet ; (*b.*) neglects of the sick ; indifference to medical aid ; neglect of vaccination ; (*c.*) crowding and imperfect ventilation ; (*d.*) less vital power or capacity to resist the ravages of disease ; (*e.*) ignorance of, and violation of physiological and sanitary laws.

Many of these causes are capable of removal or amelioration. With advance of knowledge, and the acquisition of property by the colored race, there will be a corresponding diminution of the death rate.

5. Phthisis pulmonalis appears to destroy as many lives in New Orleans as yellow and malarial fevers combined. Thus during the past twelve years, 1869-1880 inclusive, phthisis pulmonal is caused 9,800 deaths, yellow fever 5,102 and malarial or paroysmal fevers 4,854 deaths.

6. If the mortality of the past six years (1875-1880) be compared with that of the previous six years, 1869-1874, it will be found that the deaths of the first named period exceed but to a slight degree those of the latter, notwithstanding the epidemic yellow fever of 1878. Thus :

Total mortality for six years, 1869-1874	40,370
Total mortality for six years, 1875-1880	41,851
Excess of mortality during six years, 1875-1880	1,481

A portion of this difference is due to the increase of population.

This period may be characterized in the sanitary history of New Orleans, as that of the experimental use of disinfectants, and more especially of *carbolic acid.*"

Under the direction of Dr. C. B. White, President of the Board of Health (1869--1875 inclusive), carbolic acid was more extensively used than in any ether city. From the data now at hand, we find that the city of New Orleans paid the following sums for disinfectants of which carbolic acid formed the chief item.

Amount paid by the city of New Orleans for disinfectants ordered by the Board of Health : 1870, $2,851.77 ; 1871, $2,448.21 ; 1872, not recorded ; 1873, $16,069.83 ; 1874, $2,482.35 ; 1875, $12,376.35 ; total $35,128.51.

The amount stated ($35,128.51) simply represents the amount actually paid by the city, and entered upon the records ; outstanding claims are not included.

The opinion prevailed that yellow fever could be controlled and even arrested by the free use of carbo ic acid ; but the result of the epidemic of the year 1878, when $12.207.22 were expended for disinfectants, and more especially carbolic acid, scattered to the winds that be ief that certain disinfectants, and especially carbolic acid, possessed any specific control over *epidemics* of *yellow fever.*

The signal failure of the experiments with carbolic acid disinfection, was followed by the wild panic and shot-gun quarantines of 1880.

MORTALITY OF 1880.

The accompanying charts illustrate the relations and changes of temperature—humidity and barometric pressure—to the death-rate per 1000 inhabitants during the year 1880.

The charts illustrate so fully and clearly the relations of the death-rate to meteorological conditions that any detailed explanation is unnecessary. The following points, however, are worthy of especial notice.

1. The highest mortality of 1880 occurred during the week ending the 12th of June.

2 During the six months ending June 30, 1880, the rain fall was 29.69 inches, the mean temperature 69,20°, mean barometer 30.07° ; total death-rate per 1000 population, 26.84; whites 23 43, colored 36.35.

During the six months ending December 31, 1880, the rain fall was 37.68 inches ; mean temperature 69.80° ; mean barometer 30.09° ; total death-rate 25.19 ; whites, 22.28 ; colored, 33.33.

It is evident that the death-rate diminished during the last six months of the year in which yellow fever most generally prevails.

3. Throughout the year 1880, the death-rate of the colored race exceeded largely that of the whites.

4. If the deaths amongst the colored population be exclnded from those amongst the white race, it will be seen that during 1880 the white inhabitants of New Orleans enjoyed a remarkable immunity from fatal diseases, and that this city was probably as exempt from fatal forms of disease amongst the white inhabitants as any other city of similar size in America or Europe.

RELATIVE MORTALITY IN THE SEVERAL DISTRICTS OF NEW ORLEANS.

From the table illustrating the *mortality from some of the principal diseases and total mortality together with the death-rate per* 1000 *inhabitants of the different districts of New Orleans, for the year* 1880, the following important results are established:

(*a*). First District : Total deaths 1393 ; whites 884 ; colored 509; death rate per 1000 inhabitants : whites, 20.40 ; colored, 36.10 ; death rate white and colored 29.24. In this district the death rate amongst the whites will compare favorably with that of any city in the Western or Eastern Hemisphere, whilst the death rate of the colored population, although higher than that of the whites, will compare favorably with that of the descendants of the African race in any large city in the United States. It is believed and hoped that the humane efforts of the Board of Health of the State of Louisiana will still further reduce the death rate amongst the colored population.

In the Second District total deaths, 1115 ; whites 699, colored 416. Death-rate per 1000 inhabitants, whites 22.28, colored 31.27. Total death-rate, whites and colored, 24.86. In the Second District, which lies below Canal street and embraces the first settled portions of New Orleans, or the "*city proper*," of Bienville, the death-rate was only a fraction in excess of that of the First District. This difference may be referred to the fact that there are a larger number of tenement houses in which are congregated foreigners and especially natives of Sicily and Italy. Repeated orders were issued by the Board of Health for the cleansing and disinfection of the crowded portions of the Second District.

In the First District extending from Canal street to Felicity road, is located the new basin and canal connecting with the lake, and in the Second District extending from Canal to Esplanade street, is located the old basin and canal originally constructed by the Baron Carondelet, and commuicating with the lake by the Bayou St. John.

Both the First and Second Districts, receive through the canals and basins, a considerable amount of shipping and a corresponding number of seamen.

The First District received a considerable amount of water by the flushing apparatus of the Auxiliary Sanitary Association, a portion of which found an exit on Camp street and Melpomene canal. No case of yellow fever was reported in the Second District which had not the advantage of the flushing, whilst but three cases were reported in the First District, which have been fully detailed in the report.

In the *Third District* total deaths 1,161 ; whites 774, colored 387 ; death-rate per 1000 inhabitants, whites 22.94, colored 32.62. Total death-rate 25.47.

In the Third District, extending from Esplanade street to the lower limits of the parish of Orleans, a large portion towards the swamps and lake is ill drained and subjected to the action of malaria ; and the statistics show that the deaths from the various forms of malarial fever were relatively more numerous; thus deaths from malarial fever —First District, 74 ; Second District, 62 ; Third District, 82.

Without doubt, a proper system of drainage and sewerage would reduce the death from malarial fever to the minimum.

The cultivation of rice has been inaugurated in the rear of this district, and a portion of the sickness and mortality in this district must be referred to this the most pernicious of all forms of agriculture. The Legislature of Louisiana, the City Council of New Orleans and the Board of Health, should consider the subject of rice culture in its relations to the health of the City of New Orleans, and such ordinances should be considered and passed as will protect the inhabitants from the effects of the destructive emanations of rice fields.

In the Fourth District total mortality 720; whites 506, colored 214; death rate per 1000 inhabitants: whites 16.52, colored 30.96 Total death rate, whites and colored, 19.18.

In the Fourth District the whites predominate greatly over the colored, and a large proportion of the inhabitants of the garden district of New Orleans, amongst whom may be mentioned its successful merchants and business men, absent themselves from the city during the hot months of Summer and Autumn, seeking health and amusement at American and European resorts of health and pleasure.

The deaths from malarial fever in 1880 in the Fourth District number 42. It should also be noted that this district offers a far less front to the woods, the swamp and the lake than the First, Second and Third Districts. This district received the benefits of the flushing system.

In the Fifth District the total mortality was 142; whites 91; colored 51; death rate per 1000 inhabitants: whites 18.12; colored 13.30; total death rate whites and colored 16.03.

The Fifth District gave the lowest mortality in 1880 of any District within the bounds of the Parish of Orleans. This district, which occupies the opposite bank of the river and may be regarded as a separate city, received none of the benefits of the flushing system of the Auxiliary Sanitary Association of New Orleans. Such facts illustrate the nature of the claim that the running of water through the gutters of the Fourth District and through a portion of the gutters of the First District, preserved the City of New Orleans from yellow fever in 1880. The Board of Health has given its countenance and support to all rational efforts to improve the health of this city, and recognizes the labors of its officers in the cleansing and disinfection of privies, the prompt removal of garbage, the disinfection and cleansing of all premises in which cases of yellow fever, typhoid fever, scarlet fever, measles and small pox have occurred.

In the Sixth District, the total deaths numbered 329; whites, 196; colored, 123. Death rate per 1000 inhabitants: whites, 16.40; colored, 30.16. Total death-rate per 1000 inhabitants, 20.52.

The colored population of the Sixth District, dominated in a measure the low death-rate of the whites 16.40, which would compare favorably with the death-rate of any similar congregation of white inhabitants in any portion of the civilized world.

We have in this report recorded the relative population, white and colored, of the city of New Orleans. From this table it will be shown that the colored population is not uniformly distributed in the districts of New Orleans.

In the Sixth District malarial fever caused ten deaths and in the Fifth District seven.

In the Seventh District the total deaths numbered 128—whites 62, colored 66. Death-rate per 1000 inhabitants—whites 19.92; colored 21.12; total death rate per 1000 inhabitants 20.52. In this district the colored people, as in the Fifth District, are more comfortably situated, owning more property and being less crowded, and being also at the same time less subjected to the excitement and vices of the thickly populated portions of New Orleans, and we find a proportionately lower death-rate.

As the outcome of this investigation the Board of Health has the following important results.

FIRST DISTRICT.

Death-rate per 1000 inhabitants 24.24; whites 20,40, colored 36.10.

SECOND DISTRICT.

Death-rate per 1000 inhabitants 24.96; whites 22.28, colored 31.27.

THIRD DISTRICT.

Death-rate per 1000 inhabitants 25.47; whites 22.94, colored 32.62.

FOURTH DISTRICT.

Death-rate per 1000 inhabitants 19.18; whites 16.52, colored 30.96.

FIFTH DISTRICT.

Death-rate per 1000 inhabitants 16.03; whites 18.12, colored 13.30.

SIXTH DISTRICT.

Death-rate per 1000 inhabitants 20.62; whites 16 40, colored 30.16.

SEVENTH DISTRICT.

Death-rate per 1000 inhabitants 20.52; whites 19.92, colored 21.12.

From the preceding statistics it must be evident to every honest observer that this year (1880) must be regarded as a period free from any pestilential and fatal influences

in New Orleans, and the earnest hope may be expressed that the Ruler of all things, will continue to vouchsafe to the people a similar exemption, in the future from epidemic diseases.

The statistics of 1880, render it evident that there is nothing in the climatic and topographical conditions of New Orleans, which precludes it from being the healthiest city in America or Europe.

With thorough sanitary regulations, with the prompt removal of all garbage and fœcal matters and with the constant destruction of the poisons of all infectious and contagious diseases, by efficient and active sanitary officers, and with a rigid but enlightened quarantine, the Board of Health may sincerely hope for continued immunity from pestilential diseases.

The absence of pestilential diseases from New Orleans and from the valley of the Mississippi, will be followed by prosperity to all classes, and by a marked physical and moral development of all the various races congregated in the metropolis of the West.

SANITARY MEASURES AND REFORMS.

PROTECTION FROM OVERFLOW—DRAINAGE AND SEWERAGE

The great sanitary problems of New Orleans are :

1. *Protection of the city from overflow, by substantial levees elevated at least two feet above the line of the highest waters.*
2. *Thorough surface and subsoil drainage.*

Under this head should be included the reclamation of the swamps in the rear of the city, and perfection and proper grading of gutters and surface drains, and the proper excavation, perfection, cleansing and flushing of the canals which receive the storm waters and those continually yielded by the gutters.

3. *The immediate and continuous removal of all fœcal matters·*
4. The daily removal of garbage by an efficient scavenger force.
5. *The constant repair and cleansing of the streets.*
6. *Paving the streets with the most substantial materials.*

Thus far the square block pavement has proved to be best adapted to the peculiar soi and location of New Orleans. The same form of gravel and small stones as those em ployed at the jetties by Captain Eads might be used upon many of the dirt streets. Thi gravel may be obtained in large quantities from an island in the Mississippi river abov Baton Rouge, and might be brought down in large quantities in flat-boats and lande on the river front in any of the various districts of the city. The shells employed upo certain of the streets are, in the course of time, reduced to an impalpable powder, whic forms a diffluent mud in winter, and affords an irritating dust in dry weather.

The gravel from Profit's Island on the Mississippi river, is composed chiefly of sile and silicates of the hardest description, which have resisted the action of the elemen for unknown ages.

7. Abundant supplies of river water for the use of the inhabitants and for the clean sing of private premises, and the purification of the markets, gutters and streets.

The highest interests of the citizens of New Orleans, demand the institution of a rig scientific investigation by the most skilled engineers of the United States and Europ of the drainage and sewerage of this city.

A properly constituted commission of civil and military engineers might devise a pl of protection from overflow, and of surface and subsoil drainage, and of sewerage, whi may be capable of progressive execution and expansion during indefinite periods in t future, and in accordance with the growth of the city.

Every system of sewerage and sub-soil drainage must be adapted to the peculiar top graphy of the land occupied by the city.

The following facts must be considered:

(*a*). The land on which New Orleans is built is protected from overflow of the Miss sippi River by a continuous levee from the beginning of its river front to the ending it, a distance of about twelve miles. The levee has an elevation above the natural s of from six to ten feet.

The land upon which New Orleans is built *falls* from the river back to Claiborne str one mile, where it is twelve feet below the river.

In high water the entire area occupied by the city of New Orleans is below the le of the Mississippi River.

It is equally necessary to protect the rear of the city by a system of powerful leve from overflows from the lake.

It frequently happens that the level of the lake is above that of a large portion of land occupied by the city.

The basin occupied by New Orleans is further diversified by a ridge of land. On either de of the Metairie Ridge the land slopes in one direction towards the lowest depression owards the river, and in the other towards Lake Pontchartrain.

From these natural conditions, the subsoil of a large area of the city of New Orleans perpetually saturated with water.

At the present time New Orleans is drained by large canals thirty-five miles long, hich receive the surface water of over 300 miles of gutters.

At the present time these canals are more than one-half full of the foul deposits washed own through the gutters of the city.

(*b*). According to the city map of Mr. W. H. Bell, the inclosure within the protection vees measures 26,026 acres, which, if populated with forty persons to an acre, would ive 1,041,040 persons. If the daily excrements of this population per head be estimated t three pounds, the entire amount would equal 569,970 tons in one year.

But if with Civil Engineers, we consider the present city to lie on the slope between e river and Claiborne street, which contains between the upper and lower protection vees, 9,319 acres, and 30 persons to an acre, it will give a population of 372,760. The ily excrements of this population would be 1,118,280 pounds, and would require to ove it daily 1,118 carts, each taking half a ton at a load, or it would take 204 of the rgest ships that come to New Orleans to carry a year's filth from the city, without calulating the refuse from cattle, horses and other animals.

During the present year, it has been attempted to remove a portion of the excrements ored up in the privies of the city, by the so-called "*air-tight*" and "*odorless*" barrels and arts, to the nuisance boats, to be towed below the city limits and dumped into the Mississippi river.

If we estimate the present population of New Orleans at 220,000 inhabitants, and alw five inhabitants to each house, we have 44,000 houses.

It is possible that in many cases two or more dwellings are served by a single privy ault.

If the total number of privies in the city of New Orleans number about 40,000; and if e cost of emptying each of those privies be about ($5 five dollars), then it is evident at the emptying of the privies of New Orleans, annually cost $200,000.

In ten years the cost of emptying the privies of New Orleans only once annually ould reach the enormous sum of $2,000,000 (two million dollars.) And at the end of is period there would be no permanent works of sewerage or drainage and no subitute for the wretched privy system now used.

To the above estimate must be added the cost of disinfectants to destroy the foul sses, and more especially the poisonous sulphureted hydrogen and sulphuret of amonia perpetually generated in these foul storehouses of filth.

With all the efforts of the sanitary officers it must be admitted that the garbage and isance boats and even the apparatus for emptying the privies are foul and unbearae nuisances

(c.) The streets of New Orleans open and requiring cleaning and repairing have been assified as follows: Square block pavement, 22.06 miles; cobblestone, 38.00 miles; allast roads, 19.07 miles; shell roads, 26 54 miles; plank roads, 5.00 miles; dirt streets, 2.34 miles. We have, then, nearly 500 miles of dirt streets, not including those not in neral use.

There are also to be built and kept in repair 191 canal bridges, 5180 wooden street idges, 459 stone crossings, 580 iron street bridges, and 3301 wooden street crossings, gether with the nine navigation bridges over the New Canal, the Carondelet Canal, d Bayou St. John.

In wet weather the dirt streets become impassable quagmires, and from the failure of e garbage carts they become the receptacle of garbage and filth of every description.

Added to this the rear portions of the city have been overflowed upon several occaons by the waters of the lake, and incalculable suffering and hardship have been icted upon the inhabitants.

A thorough system of protection from overflow, combined with an effective system of werage and underground drainage, will practically elevate the dirt streets into dry ads and highways suitable to the purpose of transportation and commercial interurse.

(d.] Without doubt a large number of the diseases of New Orleans are, to a certain tent, dependent upon the saturation of the atmosphere with moisture, and, under rtain circumstances, with foul exhalations from privies and gutters and ill-drained d ill-ventilated premises, and from the filthy drainage canals.

The foul exhalations may, to a great extent, be removed by a prompt removal of all cal matter and garbage. The moisture may be greatly diminished by thorough surce and sub-soil drainage.

In this connection the following important facts should be noted:

During the past twelve years, the average number of deaths caused by phthisis pulmonalis alone was 816, giving a grand total during this period 1869 to 1880, of 9,800 deaths.

One in 248 of the inhabitants of New Orleans die annually of phthisis pulmonalis.

It will be seen from the following table that the percentage of deaths from phthisis pulmonalis, varies in the different districts of New Orleans:

TABLE SHOWING NUMBER OF DEATHS BY PHTHISIS PULMONALIS IN THE DIFFERENT DISTRICTS OF THE CITY OF NEW ORLEANS, AND DEATH RATE PER 1000 INHABITANTS PER ANNUM.

DISTRICTS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Death Rate per 1000 per Annum.
First District	21	15	27	22	21	17	22	15	6	12	25	19	222	3.86
Second District	5	18	12	14	14	18	10	8	16	18	20	15	168	3.76
Third District	10	7	9	11	10	14	6	12	15	11	14	16	135	2.96
Fourth District	7	15	12	9	6	6	3	9	8	7	16	16	114	3.37
Fifth District	1	.....	3	1	1	2	.....	4	3	1	5	1	25	2.82
Sixth District	4	3	4	2	6	2	3	.....	.....	3	.....	4	29	1.80
Seventh District	.....	.....	3	1	.....	1	.....	.....	.....	.....	3	1	9	1.44
Total	48	58	70	60	58	60	44	48	48	52	83	73	702	3.25

The mortality is greater in the most crowded districts, being in the First 3.86 per 1000 inhabitants, Second District 3.76, Third 2,96, Fourth 3.37, Fifth 2.82, Sixth 1.80, Seventh 1.44.

During the same period, 5,144 deaths were caused by diarrhœal diseases, or on an average 428 deaths each year, are caused by these diseases.

Four thousand eight hundred and fifty-four deaths were caused during this period by malarial fevers, or 404 deaths per annum. This class of diseases appear to be directly related to defective drainage.

During the period of twelve years therefore, (1869–1880) phthisis pulmonalis, diarrhœal diseases and malarial fevers, caused in the city of New Orleans, 19,798 deaths, whilst during the same period yellow fever caused only 5102 deaths as shown in the following table:

DEATHS BY YELLOW FEVER IN NEW ORLEANS DURING THE TWELVE YEARS, 1869-80.

YEAR.	June.	July.	August.	September.	October.	November.	December.	Total.
1869	.....	1	.....	.....	2	.....	.....	3
1870	1	.....	3	231	242	106	5	588
1871	.....	.....	2	9	22	19	2	54
1872	.....	.....	1	5	24	7	2	39
1873	.....	3	19	108	79	17	.....	226
1874	.....	.....	.....	2	6	2	1	11
1875	.....	.....	5	24	20	9	3	61
1876	.....	.....	1	20	15	4	1	41
1877	.....	.....	.....	.....	.....	1	.....	1
1878	.....	26	1025	1780	1065	147	3	4056
1879	.....	3	4	7	5	.....	.....	19
1880	.....	1	.....	.....	1	.....	.....	2
Total	1	34	1060	2186	1481	312	17	5102

The entire attention of the inhabitants of the Mississippi Valley is concentrated upo New Orleans, to the detriment of her commerce and fair name, on account of the occ sional existence of yellow fever in the epidemic form; and her people are prone to r gard this disease of far greater importance than phthisis pulmonalis, diarrœhal diseas and malarial fevers, which perpetually claim a far greater number of victims.

It is possible by a proper system of drainage and sewerage to greatly reduce the mo tality from phthisis pulmonalis, diarrœhal diseases and malarial fevers.

But any philosophical and successful system must be based upon the peculiar top graphy of New Orleans, situated below the high water lines of the river front and the lakes in the rear.

(e.) Every system of sewerage and drainage adapted to New Orleans, must depend its ultimate success upon the use of powerful pumps to lift up the liquids and proj them into the Mississippi River below the limits of the city.

(1). The construction of a drainage and navigatien eanal circumscribing the city and connecting the waters of the Mississippi above Carrollton with those below the Barracks promises great hygienic and commercial advantages.

To render the canal available at once to the purposes of navigation, drainage and sewerage, it should not be less than thirty feet below low-water in the river and should be not less than three hundred feet in width.

Such a project could only be successfully executed by the combination of great capital, and the co-operation of the General Government.

The protection of the city from overflow, and thorough drainage and sewerage will, without doubt, render New Orleans one of the healthiest cities in the world, and do more to ward off destructive epidemics, and restore confidence in her own citizens and in those of surrounding States than even the most rigid and effective quarantine.

PROTECTION OF THE CITIZENS OF LOUISIANA FROM UNQUALIFIED PRACTITIONERS OF MEDICINE, AND THE EXTENSION OF THE REGISTRATION OF MARRIAGES, BIRTHS AND DEATHS, TO THE ENTIRE STATE.

Article 178 of the Constitution of the State of Louisiana, adopted in 1879, ordains that:

"The General Assembly shall provide for the interest of State Medicine in all its departments; for the protection of the people from unqualified practitioners of medicine; for protecting confidential communications made to medical men by their patients while under professional treatment; for the establishment and maintenance of a State Board of Health."

In order to diffuse a correct knowledge of all subjects relating to the important subjects, concerning the constitution and execution of quarantine, and the laws relating to sanitary and medical subjects, and to the protection of the people against the introduction and spread of contagious diseases, and to the registration of marriages, births and deaths; the Board of Health of the State of Louisiana published in the month of September, 1880, a large edition of the "*Acts of the Legislation of Louisiana establishing and regulating quarantine for the protection of the State; organizing and defining the powers of the Board of Health and regulating the practice of medicine, midwifery, dentistry and pharmacy; also rules and regulations of the Board of Health of the State of Louisiana, and Health Ordinances of the City of New Orlrens, quarantine and sanitary.*"

These laws, ordinances and rules, collected and classified by the President of the Board of Health, were distributed to the State officers, judges, city authorities and the prominent physicians and sanitarians of Louisiana.

As the population of New Orleans numbers not more than one-fourth of that of the entire State, it is evident that great benefit would accrue to the entire State, by extending many of their provisions, which now relate exclusively to the parish of Orleans, to every city, town and parish in the State.

The sanitary and social advancement of the State would be especially promoted by the extension of the laws regulating the registrations of marriages, births and deaths, to every portion of the State.

Such statistics would prove of marked value in all respects, but especially as establishing a knowledge of the most fatal diseases and determining the death-rate and prevailing diseases in different localities and amongst the different races.

Such data would form the necessary foundation for sanitary reform and advancement.

TABLE ILLUSTRATING DEATHS IN THE FIRST DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1881.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	2	1	2	1	2	....	5	....	1	2	16	3	4	4	6	5	13	7	5	4	6	4	5	1	67	31	98
Typhoid Fever	2	....	....	....	....	2	....	....	1	....	....	....	....	....	1	....	....	1	2	....	3	1	....	1	9	5	14
Scarlet Fever	7	....	3	1	8	1	14	2	3	3	2	1	....	2	....	....	....	....	....	....	2	....	2	....	41	10	51
Measles	....	....	....	....	....	....	2	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5	0	5
Small-Pox	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Diphtheria	8	....	5	....	1	....	3	....	2	....	....	....	1	....	..	..	1	....	2	....	3	....	....	....	26	0	26
Diarrhœal Diseases	2	....	1	2	3	....	....	2	7	3	5	8	5	3	3	2	3	3	6	2	8	3	7	2	50	30	80
Congestion of Brain	2	1	2	....	....	....	1	....	5	2	14	1	4	3	....	3	3	2	7	..	....	..	6	....	44	12	56
Sun-stroke	....	....	....	....	....	....	....	....	....	....	6	1	2	....	....	1	....	....	....	....	....	....	....	....	8	2	10
Convulsions	....	2	3	2	3	2	10	1	4	2	....	1	2	2	1	5	2	1	5	1	3	....	....	....	33	19	52
Phthisis Pulmonalis	16	15	9	5	16	13	9	14	12	8	11	3	14	6	6	11	6	7	8	11	8	15	11	11	126	119	245
Deaths from all other causes	65	21	52	25	65	35	61	39	78	30	91	30	69	32	56	33	41	28	47	24	45	32	51	30	721	329	1050
Total number of Deaths	104	40	77	36	98	53	105	58	116	50	145	48	101	52	73	60	69	49	82	42	78	55	82	45	1030	588	1618
Death rate per 1000 Inhabtants per annum. White	28.80		21.30		27.10		29.03		32 13		40.16		27.97		20.22		19.11		22.71		21.60		22.71		23.77		
Colored	33.97		30.58		45.02		49.27		42.47		40.77		44.17		51.81		41.62		35.67		46.72		38.22		41.62		27.81
Total White and Colored	30.08		23.60		31.54		34.05		34.71		40.31		31.96		27.78		24.64		25.90		27.78		26.52				
Malarial Fevers	.62		.62		41		1.04		.62		3.96		1.67		2.29		4.17		1.88		2.08		1.25		1.70		1.70
Phthisis Pulmonalis	6.47		2.95		6.05		4.80		4.17		2.92		4.17		3.55		2.71		3.96		4.80		4.59		4.26		4.26
Number Still-born Children	7	4	1	2	4	1	5	2	2	1	6	5	3	1	2	6	6	5	7	4	7	12	2	4	52	47	99

TABLE ILLUSTRATING DEATHS IN THE SECOND DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1881

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	2	....	1	1	3	5	5	3	1	3	6	4	7	4	6	3	11	3	7	4	1	3	3	1	53	34	87
Typhoid Fever	3	...	3	....	2	1	....	1	...	1	....	....	1	....	....	1	1	1	1	3	2	2	2	1	15	11	26
Scarlet Fever	2	...	3	....	3	3	4	5	3	5	2	....	1	....	...	1	....	....	....	....	....	....	....	....	18	14	32
Measles	....	....	2	....	....	....	1	1	1	....	2	2	...	1	....	....	....	....	..	....	....	....	....	....	6	4	10
Diphtheria	....	....	....	1	3	1	....	....	2	...	....	1	....	1	3	1	1	1	....	1	...	..	2	....	11	7	18
Diarrhœal Diseases	1	1	1	4	2	2	2	....	15	4	13	10	2	3	2	3	3	3	5	1	2	2	2	1	50	34	84
Congestion of Brain	2	1	3	1	2	...	1	1	3	....	9	1	3	2	2	1	....	....	1	....	1	....	...	1	27	8	35
Sunstroke	....	....	....	....	....	....	....	....	....	....	6	2	1	....	....	....	....	....	....	....	....	....	....	....	7	2	9
Convulsions	1	....	..	....	....	....	2	5	3	2	...	....	3	....	3	....	1	1	1	2	....	..	....	....	15	13	28
Phthisis Pulmonalis	10	4	13	5	6	8	15	9	11	7	7	6	10	6	4	6	2	9	5	6	6	5	10	4	99	75	174
Deaths from all other causes	40	28	34	23	33	30	34	13	41	30	50	28	35	17	35	18	27	15	31	19	35	39	42	24	437	284	721
Total number of Deaths	61	34	60	35	55	53	64	38	80	52	95	54	62	34	55	34	46	33	51	36	47	51	61	32	738	486	1224
Death rate per 1000 Inhabitants per annum. White	23.33		22.95		21.04		24 45		30.60		36.34		24.10		21.04		11.22		19.53		17.98		23.33		....	....	.....
Colored	30.57		31.57		47.81		34.28		46.91		48.91		30.67		30.67		29.77		32.47		46.01		28.87		23.52	36.53	27.40
Total white and colored	25.51		25.51		29.91		27.40		35.46		40.02		26 05		23.90		21.22		23.37		26.10		24.98		.....	.....	.....
Malarial Fever	0.7	0.0	0.3	0.9	1.1	4.5	1.9	2.7	6.3	2.7	2.2	2 9	2.6	3.6	2.2	2.7	4.2	2.7	2.6	3.6	0.3	2.7	1.1	0.9	1.6	2.5	1.9
Phthisis Pulmonalis	3.8	3.6	4.9	4.5	2.2	7.2	5.7	8.1	4.2	6.3	2.6	5.4	3.8	5.4	1.5	5.4	0.7	8.1	1.9	5.4	2.2	4.5	3.8	3.6	3.1	5.6	3.8
Number Still-born	3	....	4	4	5	....	4	1	2	2	4	2	3	2	4	4	6	4	6	2	5	2	1	1	47	24	71

Population—White, 31,368; colored, 13,301; total, 44,669.

TABLE ILLUSTRATING DEATHS IN THE THIRD DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1881.

NAME OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	...	...	...	...	...	...	...	...	...	...	2	...	3	1	1	...	...	...	2	...	...	1	...	...	8	1	9
Scarlet Fever	6	...	6	...	9	...	9	1	10	3	7	1	4	...	2	...	...	...	...	...	...	1	...	...	53	66	59
Typhoid Fever	1	1	...	1	1	...	1	...	1	1	...	1		1	2	...	1	...	1	...	1	...	3	...	12	5	17
Measles	...	...	...	...	...	...	3	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	5
Small pox	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	3	...	3
Diphtheria	3	1	2	2	2	...	1	...	1	...	2	...	...	...	3	1	...	...	1	...	...	...	...	...	15	3	18
Diarrhœal Diseases	4	2	3	1	5	2	4	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16	6	22
Congestion of Brain	1	2	2	...	...	...	1	1	1	...	3	...	4	1	2	1	3	...	1	...	...	...	...	...	18	5	23
Sunstroke	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2
Convulsions	3	2	2	1	...	1	1	...	...	...	...	...	...	...	...	...	2	...	1	...	...	...	...	...	9	4	13
Phthisis Pulmonalis	10	6	10	2	7	4	8	5	5	4	7	7	5	5	11	6	8	7	8	4	7	3	2	1	88	54	142
Pneumonia	10	7	2	2	6	3	1	4	...	...	...	3	1	...	...	...	1	2	3	2	3	1	5	2	32	26	58
Deaths from all other causes	45	22	38	24	52	19	39	26	71	29	75	40	69	32	41	25	32	23	45	10	38	37	37	16	581	314	895
Total number of deaths	83	43	65	33	82	29	69	38	91	37	99	52	87	40	62	33	72	32	62	16	49	43	48	19	859	415	1274
Death rate per 1000 inhabitants per annum. Whites	29.41		23.12		29.41		24.27		32.37		35.27		30.94		22.05		25.61		22.05		17.43		17.43		25.46		
Colored	43.52		33.40		29.35		38.46		38.40		51.79		40.47		33.40		33.46		16 19		43.22		19.23		35.17		
Total	33.18		23.60		29.28		28.16		33.67		39.76		32.54		25.03		29.41		20.53		24.21		17.63		27.94		
Malarial Fevers	...	...	...	...	...	...	...	...	...	...	0.71	...	1.06	1.01	...	...	..	...	0.71	...	..	1.01	...	...	2.84	1.01	2.37
Phthisis Pulmonalis	3.55	6.07	3.55	2.01	2.48	4.04	2.84	5.06	1.77	4.04	2.48	7.08	1 77	5.06	3.54	6.07	2.84	7.08	2.84	4.04	2.48	3.03	0.71	1.01	2 60	4.55	3 11
Number stillborn	2	4	2	...	3	2	3	1	2	2	2	1	...	2	1	2	2	1	5	5	6	3	8	4	36	27	63

Population—Whites, 33,732; colored, 11,526; total, 43,588:

TABLE ILLUSTRATING THE DEATHS IN THE FOURTH DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1881.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	2	....	1	....	2	....	1	....	2	...	3	....	3	....	6	2	2	4	4	3	2	....	1	....	29	9	38
Typhoid Fever	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	2	....	4	....	4
Scarlet Fever	1	1	1	1	6	....	13	1	4	2	2	....	....	1	....	....	1	....	....	....	....	....	....	....	28	6	34
Measles	....	....	1	....	....	....	2	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	4
Small-pox	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Diphtheria	1	....	1	....	1	1	....	....	....	....	....	....	....	....	....	....	1	....	2	....	....	....	....	....	6	1	7
Diarrhœal Diseases	3	1	5	....	4	1	....	....	29	2	19	8	9	2	7	....	6	3	1	2	1	....	5	3	81	19	100
Congestion of the Brain	2	....	....	....	....	....	1	....	3	....	3	2	2	1	3	....	1	....	3	....	3	2	1	1	22	6	28
Sunstroke	....	....	....	....	....	....	....	....	....	....	4	....	1	....	....	....	....	....	....	....	1	....	....	....	6	....	6
Convulsions	2	....	1	2	2	....	1	....	2	2	5	1	3	1	1	2	....	1	....	1	....	....	1	...	18	10	28
Phthisis Pulmonalis	8	1	6	1	15	3	4	2	8	7	1	1	6	1	2	1	4	1	3	3	6	4	4	5	67	30	97
Deaths from all other causes	33	12	19	11	25	8	20	10	23	19	27	10	31	12	25	8	19	7	15	10	18	12	25	8	280	127	407
Total number of Deaths	53	15	35	15	55	13	44	13	72	32	64	22	55	18	44	13	34	16	29	19	31	18	39	17	478	178	656
Death rate per 1000 Inhabitants per annum. White	20.76		13.71		21 55		17.04		28.21		25.07		21.55		17.24		13.32		11.36		12.14		15.28		15.60		17.40
Colored	26.04		26.04		22.57		22.57		55.57		38.20		31.25		22.57		27.78		32.99		31.25		29 52		25.75		.....
Total	21.74		15.98		21.74		18.22		33.25		27 49		23.34		18.22		15.98		15.34		15.66		17.90		17.40		.....
Malarial Fevers	0.63		0 31		0.63		0.31		0.63		0.95		0.95		2.55		1.65		2 23		0.63		0.31		1 01		1.01
Phthisis Pulmonalis	2.87		2.23		5.76		1.65		4.79		0.63		2.23		0.95		1 34		1.65		3.19		2.87		2 58		2.58
Number Still-born	7	2	4	1	6	2	2	...	3	1	...	...	5	...	1	1	5	3	1	...	3	2	3	2	40	14	54

TABLE ILLUSTRATING DEATHS IN THE SEVENTH DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1881.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	....	....	....	....	....	..	....	1	....	....	....	....	....	1	2	....	3	5	....	....	....	....	....	....	5	7	12
Typhoid Fever	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1	....	....	....	3	....	4	....	4
Scarlet Fever	..	....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	1	....	1
Measles	....	....	....	....	....	..	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1
Small Pox	..	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Diphtheria	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Diarrhœal Diseases	....	....	....	....	...	....	....	....	2	....	2	....	1	....	....	....	1	1	2	....	....	..	....	..	8	1	9
Congestion of the Brain	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sunstroke	....	....	....	....	....	....	....	....	....	....	....	....	2	1	....	1	....	1	....	..	....	1	1	...	4	5	9
Convulsions	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	2	....	3	....	....	....	....	....	2	....	12	12
Phthisis Pulmonalis	....	1	....	..	....	1	....	1	....	1	....	1	....	..	....	2	....	3	....	....	....	....	....	....	....	....	....
Deaths from all other causes	1	4	....	3	1	3	2	3	...	4	3	5	5	3	5	6	....	1	3	1	4	4	1	3	25	40	65
Total Number of Deaths	1	5	1	3	1	4	3	5	3	5	5	7	8	5	7	9	4	11	6	1	4	5	5	5	48	65	113
Death rate per 1000 Inhabitants per annum. White	3.85		3.85		3.85		11.57		11.57		19.28		30.32		26.99		15.42		23.13		15.42		19.28		15.42		18.11
Colored	19.20		11.36		7.69		19.20		19.20		26.89		19.30		34.56		42 24		3.84		19.20		19.20		20 80		
Total White and Colored	1.54		7.69		9 62		15.39		15.39		23.08		25.01		30.78		28.87		13.47		17.31		19.27				
Malarial Fevers	.....		.....		.....		1.94		.. ..		.. ..		.....		3 84		15.39		.....		.. ..		.....		1.66	2.24	1.94
Phthisis Pulmonalis	1.94		.....		1.94		1.94		1.94		1.94		1.94		3.88		5.77		.....		.....		3.88		..	1.94	1.94
Number Still-born	.. ..		.....		.....		.....		.....		..		.. ..		.. ..		.. ..		.....		....		.. ..		.....		.....

Population—Whites, 3,112; Colored, 3,125. Total, 6,237.

TABLE ILLUSTRATING DEATHS IN THE FIFTH DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1881.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	...	....	....	....	....	1	....	....	....	....	....	....	2	2	1	2	..	2	....	1	....	..	1	..	4	8	12
Typhoid Fever	....	....	....	....	....	...	...	....	....	....	..	....	....	....	....	....	....	....	...	....	1	...	..	....	1	...	1
Scarlet Fever	1	....	...	....	1	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2
Measles	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Small-pox	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Diphtheria	....	....	3	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	1	4
Diarrhœal Diseases	....	....	....	....	....	....	....	....	2	....	2	2	....	1	...	1	...	2	...	...	2	....	....	....	6	6	12
Congestion of Brain	....	....	....	....	....	....	....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sunstroke	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Convulsions	..	...	1	....	...	2	....	....	....	....	1	....	....	..	1	...	1	...	....	....	2	2	1	...	7	4	11
Phthisis Pulmonalis	....	....	....	1	...	....	1	....	1	2	....	....	....	1	....	1	2	1	....	....	2	....	1	...	7	6	13
Deaths from other diseases	6	2	3	1	5	5	4	2	9	4	4	3	4	4	5	2	3	5	9	4	4	1	6	2	62	35	97
Total Number of Deaths	7	2	7	2	6	8	5	2	12	7	7	6	6	8	7	6	6	10	9	5	11	3	9	2	92	61	153
Death rate per 1000 inhabitants per annum. Whites	16.72		16.72		14.33		11.94		28.67		16.72		14.33		16.72		14.33		21.50		26.28		21.50		18.31		17.27
Colored	6.25		6.25		25.03		6.25		21.90		18.77		25.03		18.77		31.29		15.64		9.38		6.25		15.90		
Total	12.19		12.19		18 96		9.48		25.74		17.61		18.96		17.61		21 67		18.96		18.96		14 90				
Malarial Fevers	.....	..	.....	..	1.35		.....	..	.....	..	.....	..	5.40		4.06		2.70		1.35		.....		1.35		1.35		1.35
Phthisis Pulmonalis	.....	..	1.35		.....	..	1.35		4.06		.....	..	1.35		1.35		4.06		.....	..	2.70		1.35		1.46		1.46
Stillborn Children	1	...	...	...	...	...	...	.	...	...	...	...	...	...	...	...	3	2	1	...	...	...	...	...	6	2	8

Population—White, 5022; Colored, 3845. Total, 8857.

TABLE ILLUSTRATING DEATHS IN THE SIXTH DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1881.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	....	....	....	1	....	..	....	....	....	....	1	1	1	1	....	....	3	....	2	2	....	....	....	....	7	5	12
Typhoid Fever	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	1	....	1
Scarlet Fever	....	....	2	....	2	....	1	1	3	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	8	1	10
Measles	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1
Small-pox	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Diphtheria	2	....	2	....	....	....	....	....	3	....	1	....	1	1	1	....	....	..	1	....	....	....	1	....	12	1	13
Diarrhœal Diseases	....	1	1	1	....	....	2	....	4	2	9	7	3	1	2	2	2	2	....	1	1	1	1	1	25	19	44
Congestion of the Brain	....	....	1	....	2	....	....	....	....	2	1	2	....	....	1	....	1	....	....	1	....	....	....	....	6	5	11
Sunstroke	....	....	....	....	....	....	....	....	....	....	2	..	....	....	....	....	....	....	....	....	....	....	....	....	2	....	2
Convulsions	....	....	1	....	....	....	1	2	3	....	2	1	2	3	1	1	....	....	....	....	2	1	....	....	12	8	20
Phthisis Pulmonalis	3	2	....	3	1	4	3	1	1	1	1	1	1	....	3	2	....	2	1	2	....	1	2	3	16	22	38
Deaths from all other causes	10	12	8	8	7	14	13	7	20	4	23	7	9	4	7	3	5	6	10	5	3	8	8	3	122	82	204
Total number of deaths	15	15	16	13	12	18	20	11	34	9	41	19	17	10	15	8	11	10	15	11	6	11	12	7	313	143	356
Death rate per 1000 inhabitants per annum — White	15.06		16.06		12.04		20.08		34.14		41.16		17 06		15.06		11.04		15.06		6.02		12.04		18.64		.....
Death rate per 1000 inhabitants per annum — Colored	44.13		38.08		52.96		32.36		26.48		55.91		29.42		23.54		29.42		32.36		32.16		20.59		35.06		.....
Death rate per 1000 inhabitants per annum — Total white and colored	22.45		21.71		22.45		23.20		32.12		44.91		20 21		17.22		15.72		19.46		12.79		14.22		22.21		
Death rate per 1000 inhabitants per annum — Malarial Fevers	.....		0.74		.....		.....		.....		1.49		1.49		.. ..		2.24		2.99		.. ..		.....		0 59	1.22	0.74
Death rate per 1000 inhabitants per annum — Phthisis Pulmonalis	2.99		2.24		2.99		2.99		1.49		1.49		0.74		2.99		1.49		2.24		0.74		2.99		1.33	5.39	2.37
Number Still-born	1	...	4	...	...	2	2	1	...	3	...	..	...	...	1	..	...	...	...	...	2	1	2	...	12	7	19

Population—White, 11,951; colored, 4078; total, 16,029.

TABLE D.

Mortuary Records of New Orleans, by the Month and by the Year, for Four Years—1850, 1860, 1870, 1880—in which the United States Census was Taken, and in which Yellow Fever did not Prevail to any Extent. Consolidated from Original Reports and Records, Collected and Classified by Joseph Jones, M. D., New Orleans, Louisiana, United States of America, 156 Washington Street, corner Camp Street, Fourth District, January 1, 1882.

	Total for each year 1850	1860	1870	1880	Total for 4 years 1850, 1860, 1870, 1880
GENERAL DISEASES.					
Small-pox and Varioloid	37	22	508	1	568
Measles	57	60	23	97	237
Scarlatina	21	200	44	56	321
Dengue	2	4	......	3	9
Typhus Fever	199	10	13	1	219
Cerebro Spinal Fever	......	......	22	16	39
Enteric or Typhoid Fever	103	163	20	52	338
Simple Continued Fever	16	......	9	8	33
Yellow Fever	107	15	587	2	711
Gastric Fever	......	......	4	......	4
Malarial Fevers — Intermittent Fever	45	18	27	19	109
Malarial Fevers — Remittent Fever	55	26	51	80	212
Malarial Fevers — Congestive Fever	128	250	241	151	770
Malarial Fevers — Typho-Malarial Fever	......	......	2	21	23
Malarial Fevers — Malarial Fever (unclassified)	206	58	87	90	144
Cholera, Malignant or Asiatic	1,449	30	3	......	1,481
Cholera Morbus	69	1	15	14	131
Cholera Infantum	73	108	67	89	337
Diphtheria	......	145	19	81	245
Whooping Cough	13	71	9	70	166
Erysipelas	10	19	18	11	58
Pyæmia	2	4	20	19	45
Puerperal Fever	13	10	19	12	54
Rheumatism	16	25	14	17	72
Syphilis	7	6	35	13	61
Cancer	18	58	102	129	307
Scrofula	13	3	12	4	32
Tuberculosis	......	1	32	......	33
Phthisis Pulmonalis	674	834	757	863	3,128
Tabes Mesenterica	19	184	182	144	529
Diabetes	......	......	......	4	4
Rickets	......	......	1	1	2
Anæmia	14	5	10	18	47
General Dropsy	66	152	70	47	335
Gout	1	......	7	2	10
Influenza	3	......	......	......	3
Scurvy	......	......	1	......	1
Leprosy	1	......	1	3	5
All other General Diseases not enumerated	2	3	5	21	31
LOCAL DISEASES.					
Diseases of the Nervous System.					
Congestion of the Brain	101	122	99	132	454
Inflammation of the Brain	101	30	41	14	186
Meningitis	60	60	149	73	342
Apoplexy	107	164	124	108	503
Sun-Stroke	68	72	6	2	118
Hydrocephalus	21	18	......	......	39
Diseases of the Cerebral Arteries	......	......	......	8	8
Spinal Meningitis	4	......	9	35	48
Myelitis	1	......	1	3	5
Hemiplegia	1	......	3	9	13
Paraplegia	1	......	4	2	7
Paralysis (unclassified)	17	30	43	30	120
Locomotor Ataxia	......	......	......	1	1
Tetanus — Unclassified	66	132	119	......	317
Tetanus — Idiopathic	......	......	......	5	5
Tetanus — Traumatic	5	......	......	58	63
Trismus Nascentium	163	99	186	208	656
Hydrophobia	......	4	6	3	13
Convulsions	351	26	22	5	404
Convulsions Infantile	......	409	206	172	787
Epilepsy	15	22	27	19	83
Hysteria	2	......	2	......	4
Delirium Tremens and Intemperance	104	175	24	21	324
Insanity	1	4	12	8	25
All other Diseases of this System	50	90	73	55	268
Diseases of the Circulatory System.					
Pericarditis	12	7	4	11	34
Dropsy of the Pericardium	1	......	5	1	7
Endo-Carditis	3	......	......	17	20
Heart Disease (valvular)	......	......	43	51	94
Heart Disease (Unclassified)	52	104	181	130	467
Heart, Enlargement of	1	4	25	20	50
Degeneration of Arteries	2	......	16	2	20
Aneurism	2	5	10	6	23
Aneurism of the Aorta	......	......	6	2	8
All other Diseases of this System	1	1	12	9	23
Diseases of the Respiratory System.					
Croup	32	79	19	39	170
Laryngitis	11	3	8	18	40
Oedema of Glottis	......	......	......	3	3
Bronchitis	72	110	105	136	423
Asthma	9	19	28	15	71
Pneumonia	117	329	370	307	1,123
Abscess of Lungs	1	1	6	3	11
Gangrene of Lungs	3	......	5	1	9
Hæmoptysis	......	......	......	23	23
Pleurisy	17	15	11	8	51
Empyema	......	5	......	5	10
Hæmorrhage of Lungs	......	9	20	......	29
All other Diseases of this System	29	5	16	8	58
Diseases of the Digestive System.					
Hæmatemesis	......	......	......	2	2
Stomatitis	......	......	1	5	6
Teething	137	154	78	88	457
Ulcerative Sore Throat	......	18	1	7	26
Thrush	4	1	......	2	7
Gastritis	32	11	36	39	118
Dyspepsia	......	1	4	1	6
Enteritis	281	267	195	203	946
Dysentery	338	239	184	66	847
Ulceration of the Bowels	10	10	2	1	23
Hæmorrhage of the Bowels	......	......	3	5	8
Intussusception of the Bowels	......	2	2	7	11
Obstruction of the Bowels	......	......	......	8	8
Diarrhœa	290	352	165	144	951
Hernia	2	6	4	11	23
Fistula in Ano	......	......	2	2	4
Hepatitis	35	55	38	55	183
Abscess of the Liver	8	9	7	15	39
Cirrhosis of the Liver	......	14	20	46	80
Atrophy of the Liver	......	......	7	2	9
Degeneration of the Liver	......	1	7	1	9
Jaundice	15	8	3	7	33
Peritonitis	19	44	29	37	129
Ascites	39	......	......	10	49
All other Diseases of this System	35	73	33	14	155
Diseases of the Urinary and Generative Organs.					
Bright's Disease	......	7	17	107	131
Albuminuria	2	6	25	......	33
Suppression of Urine	......	......	3	......	3
Cystitis	5	7	......	10	22
All other Diseases of this System	19	11	35	6	71
Affections Connected with Parturition.					
Hæmorrhage	8	5	11	9	33
Puerperal Convulsions	......	10	20	16	46
All others	17	28	20	9	74
Diseases of the Organs of Locomotion	3	3	6	7	19
Diseases of the Cellular and Cutaneous System	14	18	21	31	84
Conditions not Necessarily Associated with General or Local Diseases.					
Premature Birth	35	......	110	43	188
Old Age	74	55	83	72	284
Debility	171	75	137	194	557
Debility Infantile	76	91	22	161	250
Poisoning	9	3	6	4	22
General Injuries.					
Drowning	97	88	69	54	309
Inanition	......	......	30	......	30
Burns and Scalds	30	41	27	31	129
All other General Injuries	34	103	41	43	221
Local Injuries.					
Wounds	16	30	20	13	79
All others	50	39	66	39	195
Human Parasites	10	3	2	1	16
Tumors, Non-Malignant	5	5	18	11	39
Congenital Malformations	......	7	13	21	44
Suicide	10	20	11	20	61
Killed or Murdered	......	31	24	4	59
Unknown, or Not Stated	533	424	90	1	1,047
Total Deaths	7,531	7,341	6,942	5,623	27,437
Still-born	288	334	449	350	1,421

Month	1850	1860	1870	1880
Total Deaths				
January	562	547	466	446
February	397	485	429	438
March	847	547	600	402
April	475	611	545	461
May	579	614	621	584
June	433	780	672	553
July	553	775	407	423
August	594	527	480	487
September	631	583	958	454
October	582	488	721	466
November	873	510	565	517
December	729	627	512	460
Still-born				
January	20	20	28	35
February	28	29	27	25
March	25	30	31	29
April	16	19	35	23
May	32	32	30	21
June	19	30	46	27
July	25	14	32	17
August	22	34	41	33
September	22	29	46	42
October	38	32	47	24
November	26	25	31	34
December	27	44	38	32

MORTALITY OF 1881.

MORTUARY STATISTICS OF NEW ORLEANS.

MORTALITY OF 1881.

Total deaths, whites, 4127; blacks, 2279: total, 6406.

If the mortality of the year just closed (1881) be compared with that of the preceding four years we have the following figures, exclusive of still-born:

1880—Total deaths, whites, 3637; blacks, 1986; total, 5623.

1879—Total deaths, whites, 3267; blacks, 1855; total, 5122.

1878—Total deaths, whites, 8062; blacks, 2256; total, 10,318.

1877—Total deaths, whites, 3976; blacks, 2732; total, 6708.

It will be observed that the mortality of 1881 has exceeded that of 1880 by 783, that of 1879 by 1284, whilst it is 302 less than that of 1877. These years furnish the only data during the series following the recent civil war for the determination of the relative mortality of the white and black races, and in the mortuary records of the Board of Health only three years can be found before the recent civil war in which the mortality of the two races is specified, namely, 1849, 1850 and 1853, and is as follows:

1849—Total deaths, whites, 7754; blacks, 1818; total, 9572.

1850—Total deaths, whites, 6122; blacks, 1409; total, 7531.

1853—Total deaths, whites, 14,292; blacks, 1341; total, 15,633.

Total deaths, three years 1849-53: whites, 28,168; blacks, 4568; total 32,736. Cholera prevailed in 1849-50, and yellow fever in 1853.

The total deaths during the first series of five years following the American civil war were: whites, 23,069; blacks, 11,108; total, 34,177. Yellow fever prevailed in 1878, and Asiatic cholera was absent throughout the entire period. It will be observed that the mortality of the three years, 1849, 1850 and 1853, reached 32,736, or very nearly that of the five last years, 1881, 1880, 1879, 1878, 1877.

The mortality of 1881 has not been materially influenced by exotic and zymotic diseases. Thus the deaths from this class of diseases were as follows: small-pox, 5; measles, 26; scarlatina, 197; typhoid fever, 66; diphtheria, 92; whooping cough, 1. Total deaths from zymotic and epidemic diseases, 387. [See Tables F. and G].

The deaths from this class of diseases (zymotic and epidemic) were as follows, in the years specified: 1844, 231; 1845, 199; 1847, 2797; 1848, 3375; 1849, 4479; 1850, 1985; 1851, 870; 1852, 1785; 1853, 8991; 1855, 3572; 1856, 380; 1857, 662; 1858, 5397; 1859, [illegible]; 1860, 720; 1861, 445; 1863, 658; 1864, 1505; 1865, 1091; 1866, 2064; 1867, 3962; 1868, 245; 1869, 586; 1870, 1306; 1871, 169; 1872, 282; 1873, 1120; 1874, 823; 1875, 738; 1876, 738; 1877, 1254; 1878, 4327; 1879, 120; 1880, 360; 1881, 387.

We have included under the head of the zymotic diseases, the following: the small-pox, measles, scarlet fever, enteric or typhoid fever, yellow fever, malignant or Asiatic-cholera, diphtheria, and whooping-cough. It will thus be seen that the so-called contagious, infectious and epidemic diseases have been at various times the prime and sole causes of the high death-rate of New Orleans in the years in which they have prevailed. If this class of diseases be excluded we will arrive at the true rate of mortality in New Orleans, as determined by indigenous causes, namely, soil, climate, medical topography and hygienic condition.

Thus the death-rate in New Orleans from all diseases during the years specified were as follows: 1844, 51.66; 1845, 29.20; 1847, 67.18; 1848, 76.92; 1849, 78.13; 1850, 58.96; 1851, 52.48; 1852, 56.82; 1853, 99.18; 1855, 47.21; 1856, 33.05; 1857, 31.88; 1858, 68.73; 1859, 39.00; 1860, 43.52; 1861, 30.10; 1863, 40.67; 1864, 49.34; 1865, 38.32; 1866, 41.23; 1867, 52.88; 1868, 26.25; 1869, 29.79; 1870, 36.26; 1871, 28.92; 1872, 31.17; 1873, 37.73; 1874, 33.75; 1875, 30.00; 1876, 30.32; 1877, 32.11; 1878, 48.81; 1879, 23,94; 1880, 25.98; 1881, 29.64, in 1000 population.

In the series of years just recounted, we find that 1845, 1868, 1871, 1879 and 1880, excelled the year 1881 in health as shown by the death-rate.

If the zymotic and epidemic diseases be excluded, we have the following mortality per 1000 inhabitants for the years specified: 1844, 19.00; 1845, 26.98; 1847, 41.45; 1848, 47.70; 1849, 41.57; 1850, 43.67; 1851, 46.06; 1852, 44.72; 1853, 40.85; 1855, 25.75; 1856, 30.70; 1857, 27 84; 1858, 36.11; 1859, 34.20; 1860, 39.26; 1861, 27.48; 1863, 36.86; 1864, 40.67; 1865, 32.08; 1866, 29.69; 1867, 31.03; 1868, 25.07; 1869, 25.67; 1870, 29.42; 1871, 28.05; 1872, 28.05; 1873, 29.74; 1874, 32.15; 1875, 26.97; 1876, 26.39; 1877, 26.63; 1878, 28.34; 1879, 23.38; 1880, 24.32; 1881, 27.85.

It will be observed that the years 1845, 1855, 1856, 1860, 1868, 1869, 1875, 1876, 1877, 1879 and 1880, furnished a lower death rate than 1881, from epidemic or indigenous causes.

Upon the whole the preceding statistics reveal a progressive advance in the health of New Orleans, and this must be attributed to several causes—as the more stable condition of the population; the diminution of immigrants; increased facilities for drainage; improved sanitary conditions, and more rigid execution of quarantine.

We are also reminded by the preceding facts that it is unwise to draw dogmatic conclusions from the records of a few years as to the absolute value and effects of any one measure; as, for instance, the flushing of the gutters with water. It is evident that with greatly increased facilities for this work in 1881, New Orleans, nevertheless, had higher mortality than in 1880 and 1879.

The mortality by months in 1881 was as follows; January, 543; February, 466: March, 551; April, 529, May, 683; June, 733; July, 571; August, 472; September, 427; October, 442; November, 508; December, 481. Total, 6406.

The average monthly mortality of New Orleans during the past twenty-four years has been as follows: January, 521; February, 459; March, 541; April, 510; May, 607; June, 623; July, 653; August, 940; September, 880; October, 711; November, 572; December, 513. Annual average during twenty-four years, 7430.

These statistics show that during 1881, contrary to the usual course of mortality in a series of years, including epidemic and non-epidemic, the lowest mortality occurred in August, September, and October. The highest mortality occurred in January, March, April, May and June.

The increase of mortality during the winter and spring was due to the severity of the weather, the heavy rainfall, and the overflow of the rear portion of the city. The great mortality of June (733) was referable largely to the intense and prolonged heat. In May the maximum temperature ranged from 77° to 90°, and the deaths from congestion of the brain numbered fifteen, out of a total of 683 deaths from all causes. In June the maximum temperature ranged from 82° to 97°, with a mean maximum temperature of 90.8; the deaths from sunstroke numbered twenty-seven, and from congestion of the brain forty, out of a total of 733 from all causes. In July the maximum temperature ranged from 82° to 95°, with a mean maximum temperature of 90.1; the deaths from sunstroke numbered five, and those from congestion of the brain twenty-one, out of a total of 571 deaths from all causes. In August the maximum temperature ranged from 81° to 94°, with a mean of 88.6; one case of sunstroke was reported in August, and of seven deaths from congestion of the brain.

TOTAL DEATHS FROM SUNSTROKE, CONGESTION OF THE BRAIN AND FROM ALL CAUSES WITH MAXIMUM TEMPERATURE RECORDED DAILY DURING THE "HEATED TERM" (MAY, JUNE, JULY, AND AUGUST), 1881, CONSOLIDATED FROM THE ORIGINAL RECORDS OF THE BOARD OF HEALTH.

	MAY.				JUNE.				JULY.				AUGUST.		
Date.	Sunstroke.	Congestion of the Brain.	Total Deaths.	Maximum Temperature.	Sunstroke.	Congestion of the Brain.	Total Deaths.	Maximum Temperature.	Sunstroke.	Congestion of the Brain	Total Deaths.	Maximum Temperature.	Sunstroke.	Congestion of the Brain.	Total Deaths.
1	.....	1	13	84	.....	1	19	82	.....	1	31	92	.....	.....	7
2	.....	.....	10	81	.....	.....	35	84	.....	.....	12	87	.....	.....	14
3	.....	1	17	82	.....	.....	15	90	.....	1	14	86	.....	1	13
4	.....	.....	22	83	.....	1	35	87	.....	1	20	87	.....	.....	20
5	.....	1	25	80	.....	1	16	87	.....	.....	20	90	.....	.....	10
6	.....	2	21	80	.....	.....	17	87	.....	1	21	92	.....	.....	15
7	.....	.....	29	80	.....	.....	20	88	.....	.....	13	92	.....	.....	11
8	.....	1	17	77	.....	.....	20	89	.....	2	18	92	.....	.....	12
9	.....	1	27	82	.....	1	31	90	1	1	36	95	.....	.....	15
10	.....	.....	30	82	.....	1	31	91	2	.....	11	92	.....	.....	17
11	.....	1	16	82	2	1	35	90	1	2	21	92	.....	.....	19
12	.....	.....	18	83	.....	.....	7	91	.....	1	15	90	.....	1	7
13	.....	.....	21	85	.....	3	35	92	.....	.....	21	85	.....	.....	20
14	.....	2	31	89	1	3	28	95	.....	1	15	86	.....	.....	14
15	.....	.....	13	90	1	1	29	94	.....	.....	20	83	.....	.....	24
16	.....	.....	26	88	3	2	34	96	.....	.....	22	88	.....	1	15
17	.....	.....	25	86	2	3	31	92	.....	.....	5	90	.....	.....	18
18	.....	.....	16	83	.....	3	25	91	.....	.....	13	92	.....	.....	13
19	.....	.....	24	85	.....	2	9	91	.....	.....	19	88	1	.....	25
20	.....	1	24	82	1	1	24	91	.....	.....	13	90	.....	.....	17
21	.....	2	29	81	.....	2	27	94	.....	.....	18	91	.....	.....	13
22	.....	.....	15	85	4	2	34	97	.....	1	12	93	.....	.....	19
23	.....	.....	30	86	8	3	34	94	.....	2	29	93	.....	1	19
24	.....	.....	36	85	3	3	27	93	.....	2	17	92	.....	1	1
25	.....	1	23	82	1	2	31	93	.....	.....	21	93	.....	1	1
26	.....	.....	16	83	1	1	16	93	.....	1	18	90	.....	.....	
27	.....	.....	17	85	.....	2	18	91	1	1	24	89	.....	.....	2
28	.....	1	29	86	.....	.....	16	92	.....	1	21	96	.....	1	1
29	.....	.....	18	84	.....	.....	21	90	.....	.....	15	90	.....	.....	
30	.....	.....	17	84	.....	1	13	91	.....	2	11	90	.....	.....	1
31	.....	.....	28	86	.....	.....	.....	.....	.....	.....	25	89	.....	.....	1
	.....	15	683	83.6	27	40	733	90.8	5	21	571	90.1	1	7	47

It is thus shown that the mortality of June was due to the prolonged and excessive heat. The effect of heat was especially manifest in the increased mortality of infants and children.

It is worthy of note that the prolonged and intense heat of the summer of 1881 *was unattended by the development of yellow fever.*

DEATHS REPORTED BY THE CORONER AND THOSE WHICH OCCURRED IN CHARITABLE AND PUBLIC INSTITUTIONS, INCLUDING THE CHARITY HOSPITAL, DURING THE YEAR 1881.

The detailed statement of the causes of deaths reported by the Coroner and by the various public institutions of New Orleans, including the Charity Hospital, will be found in Table H, of the Annual Report for 1881. From this table the following general results are obtained:

The grand total of deaths reported by the Coroner during the year 1881 were 1018; in various public and charitable institutions, 292; in the Charity Hospital, 825, Total deaths reported by the Coroner and in charitable institutions, 2135. The races were represented as follows; By Coroner—By disease and violence, whites 472, colored 546; still-born, whites 89, colored 101; public and charitable institutions, whites 240, colored 52; Charity Hospital, whites 517, colored 308. Total whites 1318, colered 1007; total blacks and whites, 2325. This last figure includes the still-born, which numbered 190.

It is worthy of note that whilst the whites exceed the blacks in the proportion of about four to one, at the same time the deaths among the white population, certified by the Coroner, actually exceeded those among the whites in the proportion of 472 to 546. The still-born reported by the Coroner among the colored race also exceeded, in the proportion of 101 to 89, those of the white race.

THE MORTALITY AMONG THE COLORED RACE IN NEW ORLEANS AS CERTIFIED BY THE CORONER AND AS SHOWN BY THE STATISTICS OF THE CHARITY HOSPITAL, WAS AT LEAST FOUR-FOLD GREATER THAN AMONG THE WHITES.

As the deaths upon the Coroner's certificate and those recorded in the Charity Hospital represent the amount of disease and deaths occurring among the destitute, homeless and friendless poor of New Orleans, these statistics would seem to lead to the conclusion that destitution and poverty were four-fold greater among the colored population than among the whites.

Such a vast discrepancy in the ratio of deaths among those incapable of furnishing their own medicines and medical attendants must rest upon certain determinable causes.

The excess of still-born recorded by the Coroner among the colored race, in the proportion of 101 colored to 89 whites, still further indicates the greater degree of poverty and destitution among the children of Africa.

When we examine the total mortality for 1881, including the deaths from all causes, embracing the preceding statistics as occurring in charitable and public institutions, and as certified by the Coroner, we have the following: Total deaths, whites, 4127; total colored, 2279; total, whites and blacks, 1881, 6,406. The preceding number, 6,406, includes the deaths from all causes, and in all institutions, public and charitable, and those certified by the Coroner, within the limits of the City of New Orleans, exclusive of the still-born, which numbered whites, 217; colored, 136; total, 353 still-born. (See Table G, mortuary statistics of New Orleans, illustrating the mortality, by months, in the white and black races, during five years, 1877, 1878, 1879, 1880 and 1881.)

The causes of the excess of mortality among the colored population over that of the white may be formulated thus:

1. Poverty, dependent upon imprudence, idleness and vice.
2. Poverty, dependent upon ignorance of mercantile and mechanical and professional pursuits.
3. Crowding and neglect of sanitary rules and imperfect food, enforced and fostered by destitution.
4. Want of skillful medical attention and proper medicines and diet for the sick colored poor. Without doubt the humane members of the medical profession, relieve a vast amount of disease and suffering amongst the sick poor of both races; and the doors

of the Charity Hospital are wide open for the reception of the diseased, sick and suffe ing destitute poor of both races, but the preceding statistics are sufficient to arouse t philanthropist to still greater and more noble exertions.

In this great city at the mouth of this great river, all nations mingle, and it is not s prising that the miseries of the world should here find striking illustrations, and fi nish a wide field for the labors of the philanthropist, and more especially for the me cal and sanitary philanthropist.

If the still-born be excluded, the remarkable result is obtained, that out of the tot deaths occurring in New Orleans during 1881 (6,406), almost precisely one-third (or 2,1 occurred in charitable or public institutions (asylums and prisons) or were diagnosed the coroner.

One-third of those dying in New Orleans die in poverty, and are buried at the public expen

One-sixth of those who die in New Orleans perish in silence and misery, with no kind c panion, no efficient medicine, and no generous physician.

In such a condition, the President of the Board of Health finds the greatest difficu of either discovering at the earliest practicable moment, or arresting by efficient sanit measures, such contagious and infectious diseases as small-pox and typhus fever.

5. The various organizations of this city, as well as the Board of Health, cannot, windy resolutions, exorcise the demon of poverty and stay the march of grim death he reaps his richest harvest among the destitute, the dissolute and the degraded; bu may be possible by stern facts to realize our true condition, and to strike those cho in the hearts of the good and philanthropic, which, in the progress of time, may ev tuate in the amelioration of much suffering and distress.

That the heavy mortality among the colored race is to a large extent due to the pe liar conditions and vices of a large city was shown in the report of 1880.

First District.—Total deaths, 1393; whites 884, colored 509; death-rate per 1000 habitants, whites 20.40, colored 36.10; death-rate, whites and colored, 24.24.

Second District.—Total deaths, 1115; whites 699, colored 416; death-rate per 1000 habitants, whites 22.28, colored 31.27: total death-rate, whites and colored, 24.96.

Third District.—Total deaths, 1161; whites 774, colored 387; death-rate per 100(habitants, whites 22.94 colored 32.62; total death-rate, whites and colored, 25.47.

Fourth District.—Total mortality, 720; whites 506, colored 214; death-rate per inhabitants, whites 16.52, colored 30.96; total death-rate, whites and colored, 19.81

Fifth District.—Total mortality, 142; whites 88, colored 54; death-rate per 100 habitants, whites 18.12, colored 13.30; total death-rate, whites and colored 16.03.

The Fifth District gave the lowest mortality of any district within the bounds of city of New Orleans. This district, which occupies the opposite side of the river perhaps, the most sparsely settled.

Sixth District—Total deaths, 329; whites, 196, colored 123; death-rate per 1000 inh tants, whites, 16.40, colored 30.16; total death-rate per 1000 inhabitants 20.52.

Seventh District—Total deaths, 128; whites 62, colored 66; death-rate per 1000 inl tants, whites 19.92, colored 21.12; total death-rate, whites and colored, 20.52.

That the mortality among the colored race in 1880 corresponded, to a remarkabl tent, with the density of population, is shown by a comparison of the mortality o several districts just given with the population, as established by the United States sus of 1880.

Thus, the population of the districts of New Orleans in 1880, was as follows:

First District—Whites 43,319; colored 14,126; total 57,445.

Second District—Whites 31,368; colored 13,301; total 44,469.

Third District—Whites 33,732; colored 11856; total 45.588.

Fourth District—Whites 4,022; colored 3,034; total 8, 856.

Fifth District—Whites 5,0022; colored 3,834; total 8 ,856.

Sixth District—Whites 11, 951; colored 4,078; total 16, 029.

Seventh District—Whites 3,112; colored 3,125; total 6,237.

Without doubt, much of the poverty and unrelieved and unattended suffering and di in New Orleans, are dependent upon an excess of population, and more especially o colored population, above the actual necessity of manual labor, marine and merca pursuits and manufacturing industries.

Notwithstanding these causes, much good may be accomplished and many valuable saved, by the institution of free dispensaries, and the employment of one or more p cians in each ward at a just compensation, whose duty it shall be to attend the poor at all times and under all circumstances by night, as well as by day.

SMALL-POX.

During the year 1881, only five deaths have occurred from this disease. It is w of note that this great city, holding communication with all parts of the civilized and with numerous foreign and domestic cities in which small-pox is prevailing, h to the present time escaped an epidemic of this disease. The following figures rep the number of deaths from small-pox in New Orleans, during the years specified:

27; 1848, 105; 1849, 133; 1850, 37; 1851, 38; 1852, 0; 1853, 17; 1855, 0; 1856, 2; 1857, 103; 1858, 108; 1859, 43; 1860, 22; 1861, 1; 1863, 2; 1864, 605; 1865, 613; 1866, 188 1867, 47; 1868, 14; 1869, 141; 1870, 528; 1871, 2; 1872, 29; 1873, 509; 1874, 587; 1875 342; 1876, 232; 1877, 1099; 1878, 151; 1879, 0; 1880, 1; 1881, 5. Total deaths from small pox during the past thirty-six years (1844—1881), 5731.

TABLE SHOWING DEATHS IN THE FIRST DISTRICT, CITY OF NEW ORLEANS, DURING THE YEAR 1882.

DISEASES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Yellow Fever	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	2
Malarial Fevers	3	.....	.....	3	11	20	12	6	11	10	21	18	114
Typhoid Fever	2	2	2	3	2	4	.....	3	1	3	1	3	24
Scarlet fever	2	4	2	1	3	1	7	3	1	2	1	1	28
Measles	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1
Small-pox	.....	.....	7	6	6	8	2	1	3	5	7	15	60
Diphtheria	1	.....	2	1	.....	.....	.....	2	1	2	.....	1	10
Diarrhœal Diseases	6	9	3	35	24	17	14	6	.....	11	24	29	178
Congestion of Brain	2	3	2	7	3	1	1	1	2	.....	1	2	25
Sunstroke	.....	.....	.....	.....	.....	3	1	.....	1	.....	.....	.....	5
Convulsions	.....	.....	2	5	6	.....	3	.....	6	.....	3	6	31
Phthisis Pulmonalis	21	24	13	32	25	32	28	19	17	16	27	34	288
Deaths from all other causes	154	117	141	99	106	95	88	183	117	144	112	127	1436
Total Number Deaths	191	159	174	191	186	183	157	174	160	193	197	236	2201
Number of Deaths. Whites	118	108	106	111	113	107	105	133	96	120	132	162	1381
Number of Deaths. Colored	73	51	68	80	73	76	52	71	64	73	65	74	820
Death rate per 1000 Inhabitants per annum. Yellow Fever	.....	.....	.. .	....	....	0.20	0.20	....	.....	.....	.....	.....	0.03
Death rate per 1000 Inhabitants per annum. Malarial fevers	0.62	.....	.....	0.41	2.30	4.18	2.50	1.25	2.30	2.10	4.38	3.75	1.94
Death rate per 1000 Inhabitants per annum. Phthisis pulmonalis	4.38	5.02	2.71	6.68	5.22	6.68	5.84	3.97	3.55	3.55	5.64	7.09	5.01
Death rate per 1000 Inhabitants per annum. Whites	32.68	29.91	29.36	30.74	31.32	29.64	29.09	28.54	26.59	33.24	36.56	44.87	31 85
Death rate per 1000 Inhabitants per annum. Colored	62.01	43.32	57.76	67.95	52.01	64 56	44.17	60 31	54.36	62.01	55.21	62.86	58.05
To tal	39.89	33.21	36.34	39 89	38.85	38.22	32.79	36 34	33.42	4 .51	41.15	49.29	38.31

TOPOGRAPHY.

The First, Second, and Third Wards are comprised in the First Municipal District. The First and Second Wards terminate at and a little beyond the Claiborne Canal; the Third Ward runs out to the lake. Felicity and Canal streets form the upper and lower limits in the city proper.

The lands along the river for a half mile back, are much higher than the level of the lake; those in the rear portions are lower. The section beyond Broad street, between the New Basin and Canal street, is not much better than swamp land. It is covered with a series of ponds after heavy rainstorms, which last for a long time afterwards.

DRAINAGE.

Although this district now constitutes the centre of the business and enterprise in this city, the system of drainage is as primitive as of old. Surface drainage still prevails, and very imperfect it is at its best. After heavy rain storms, it is a common sight to see the rear of the district under water, which even extends as far front as Magazine street. The drainage machines have to labor days before this surplus of water is carried off.

There is a fall in the surface slope of some fourteen or fifteen feet to the low lands, three miles distant from the river. The canals leading into the lake are on a higher level than the lands adjoining, from which the drainage machines are necessary to raise the rain water into these conduits.

SANITARY CONDITION.

The front of the district, as far back as Rampart street, is, generally speaking, in a fair sanitary condition the whole year. This is owing to the streets being paved, with some exceptions, and the gutters in consequence are capable of carrying off drainage waters. This is facilitated by the Camp street culvert and the Melpomene street canal.

The rear of the district is given over to mud. The street railways, on Clio and Erato streets, have improved the streets by planking, which is vastly superior to *mud*. The extreme rear of the district being so low and so often overflowed either by rain or lake waters, besides being traversed by the sewerage canals, is the least desirable for habitation. This is so of Canal street. This portion of the city, however, will never build up until an entirely new system of drainage is perfected and carried into operation. The city, in fact, will never build out to the lake, and become then the Southern Metropolis, so often prophesied, until this is done. The drainage into the lake is wrong in every way. The river and not the lake should receive the sewerage of the city.

HEALTH.

The past year was remarkably healthy for the entire city. The summer was cool, and the fall a late and pleasant ending of the warm season.

The mortality was light in this district, with its aggregate population of fully sixty thousand persons. The deaths from all causes gave a ratio per 1000 per annum of 31.85 whites, 58.05 colored, and 38.31 total. This embraces the mortality in the Charity Hospital, an institution that receives its patients from all parts of the State and country, which had a death list of 510 whites, 294 colored, and 804 total. If this was deducted from the death rate given above, the ratio would be as follows: Whites, 16.16; colored, 37.30; total, 19.61—a reduction of almost one half in the percentage of deaths.

The deaths were light for every month in the year, except April, May, June, November and December. The maximum was reached in December, and the minimum in August.

The mortality from malarial fevers was greatest in June and November. Typhoid fever, never common in this city, was the cause of twenty-four deaths, most of which occurred in the Charity Hospital. The absence of this fever to a great extent in this city is in favor of surface drainage.

The prevalence of contagious diseases was confined principally to scarlet fever and small-pox, but particularly the latter. Small-pox was mostly in the lower districts last winter and spring, but bids fair to extend on up through the upper ones this year. From present appearances, however, I would consider that its spread will be slow. This will be the case probably if the remainder of the winter should be mild and the spring an early one. The disease seems to be at a stand-still in this district at present, there being but four cases on hand. About seventy-five per cent of the cases occur among the colored race. The death rate in this disease is very high, fully fifty per cent of the cases resulting fatally.

There is a total disregard of the merits of vaccination on the part of both whites and blacks in the lower classes. Gratuitous vaccination is repeatedly proffered to persons in the infected localities, but very seldom accepted. The cause of this indifference appears to be as much due to prejudice as to carelessness. What costs nothing must not be good for much!

The two deaths from yellow fever, as shown in the mortality table, were of cases transferred from the Third District to the Charity Hospital. No case of this fever occurred in this district, setting aside a suspicious case reported in September, back of Prieur street, near Gasquet street.

TABLE ILLUSTRATING DEATHS IN THE SECOND DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1882.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	4	5	1	1	....	...	2	1	5	2	5	6	4	1	3	1	2	2	7	1	2	...	2	4	37	24	61
Typhoid Fever	2	...	1	....	....	1	....	....	1	....	....	..	1	....	....	1	..	...	1	..	..	....	....	..	6	2	8
Scarlet Fever	1	..	3	....	....	....	..	....	2	....	1	....	1	....	....	....	....	....	....	...	2	..	....	....	10	....	10
Measles	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Diphtheria	2	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	1	..	....	....	....	....	2	2	6	2	8
Diarrhœal Diseases	2	1	2	2	...	....	3	....	4	1	....	....	2	3	3	2	2	....	4	2	1	..	1	1	24	13	37
Congestion of Brain	....	....	..	....	2	1	1	1	....	2	1	....	1	....	1	....	1	...	1	....	1	2	3	...	12	6	18
Sunstroke	....	....	1	....	2	1	5	5	5	14	5	9	2	6	1	....	1	2	....	1	....	....	....	1	22	39	61
Convulsions	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Phthisis Pulmonalis	3	7	8	5	5	10	4	4	12	7	8	7	8	8	9	9	5	5	8	6	10	8	8	4	88	80	168
Deaths from all other causes	38	32	32	27	28	26	29	32	35	35	44	17	32	20	31	19	30	24	30	24	40	28	33	19	401	302	703
Total number of Deaths	52	45	48	35	37	39	45	43	64	61	64	39	51	38	48	32	42	33	50	34	56	38	49	31	606	468	1074
Death rate per 1000 Inhabitants per annum, White	19.89		18.36		14.15		17.21		24.48		24.48		19.51		18.36		16.06		19.12		21.42		18.74		19.31		.....
Colored	40.52		31.57		35.18		38 79		55.03		35.18		34.28		28.87		29.77		30.67		34.28		27.96		35.18		.....
Total white and colored	26.06		22.29		20.41		23.64		33.58		27.67		23 68		21.49		20.14		25.66		25 25		21.49		... .		24.04
Malarial Fever	1.53	4.51	0.3	0.9	....	....	0.7	0.9	1.90	1.80	1.90	5 41	1.53	0.9	1.10	0.9	0.7	1.80	2.35	0.9	0.7	....	1 80	3.60	1.14	1 80	1.36
Phthisis Pulmonalis	1.10	6.31	2.06	4.51	1.96	9.02	1.53	3.60	4.58	6.31	3.60	6.31	3.06	7.01	3.44	8.11	1.90	4.51	3.06	5.41	3.82	7.21	3.06	3.60	2.80	6.01	3.71
Number Still-born	3	3	4	....	6	....	1	3	2	3	5	4	5	4	12	4	4	1	5	2	3	2	1	3	53	29	82

Population—White, 31,368; colored, 13,301; total, 44,669.

TABLE GIVING MORTALITY FOR THE YEAR 1882, THIRD DISTRICT.

NAME OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	....	....	....	1	...	2	....	1	....	....	1	....	...	...	....	....	3	2	1	2	..	1	....	11	5	20	25
Scarlet Fever	....	....	...	1	1	....	1		....	....	..	...	1	....	....	1	...	..	....	....	....	....	....	....	3	2	5
Typhoid Fever	....	1	....	1	....	....	2	....	3	1	2	....	2	....	1	....	1	1	1	1	1	..	4	....	17	5	22
Small-pox	....	3	2	1	6	15	13	16	8	28	12	22	5	3	2	7	....	5	1	5	..	3	2	3	51	111	162
Diphtheria	..	....	1	....	2	..	3	....	1	....	3	1	2	....	....	1	....	....	1	....	....	....	....	....	13	2	15
Diarrhœal Diseases	1	....	....	....	....	1	4	3	6	3	1	2	3	....	5	....	....	2		2	1	4	2	1	23	18	41
Congestion of Brain	1	....	1	....	3	1	....	....	....	....	....	..	2	....	1	....	....	..	2	....	1	....	1	....	12	1	13
Convulsions	1	....	1	....	2		6	2	2	1	2	..	1	....	....	....	2	1	1	1	2	....	2	....	22	5	27
Phthisis Pulmonalis	6	6	11	8	5	5	3	6	5	6	5	3	8	1	3	3	5	3	7	5	9	5	11	8	78	59	137
Pneumonia	5	3	....	2	1	3	2	4	1	4	2	1	2	.	1	1	2	....	1	2	3	2	4	6	24	26	50
Deaths from all other causes	43	23	41	21	33	41	43	39	43	34	41	35	42	29	40	16	43	18	42	22	32	21	41	22	484	321	805
Total number of deaths	57	36	57	35	53	68	77	71	69	77	69	64	68	33	53	29	56	32	57	40	49	34	67	51	732	570	1302
Death rate per 1000 inhabitants per annum. Whites	20.27		20.27		18.85		27.09		24.54		24.54		24.19		18.85		19.92		20.27		17.13		23.71		21.70		.....
Colored	36.43		35.42		67.98		71.86		78.01		64.77		33.38		29.33		32.38		40.48		34.40		51.61		48.07		.....
Total	24.47		24.21		29.21		38.98		38.86		34.00		24.83		21.58		23.16		25.52		21.84		31.06		.....		28.34
Malarial Fevers	...	..	...	1.01		2.02	....	1.01			0.35	....	....	....	..	....	1.06	2.02	0.35	2.02		1.01	..	11.13	0.15	1.68	0 55
Phthisis Pulmonalis	2.13	6.07	3.90	8.09	1.77	5.06	1.06	6.07	1.77	6.07	1.77	3.12	2.85	1.01	1.06	3.12	1.77	3.12	2.49	5.06	3.20	5.06	3.90	8.09	2.31	4.97	3.01
Number stillborn	3	....	6	1	7	2	5	1	6		9	3	6	4	4	4	9	3	4	5	4	....	6	....	63	23	.....

Population—Whites, 33.732; colored, 11.856; total, 45.588.

YELLOW FEVER IN THE THIRD DISTRICT NEW ORLEANS, 1882.

[Extract from the report of Dr. Eug. J. Mioton, Sanitary Inspector Third District.]

YELLOW FEVER.

Three cases of yellow fever have occurred in the city of New Orleans during the last year, and all three cases have taken pl·ce in the Third District, at a distance of one or two blocks from each other. The following is a brief history of the cases and of the several sanitary measures taken in connection therewith to abate the fever and prevent its spread.

The first case was that of Henry Forbes; took sick June 22, 1882, died June 27, 1882. The second, that of Johannes Stroh, took sick July 28, 1882, died August 1, 1882. The third and last case, that of Alexander Englund, took sick August 5, 1882, died August 8, 1882. I shall take up each case separately and in the order they have occurred.

FIRST CASE—HENRY FORBES.

Henry Forbes, English by birth, twenty years of age, residence in New Orleans about ten (10) days, was admitted in Ward 27 of the Charity Hospital on Sunday, twenty-fifth of June 1882, at 9 o'clock a. m. Forbes, it appears, sailed from Montevideo, in the Spanish brigantine Rita, for Havana, via Porto Rico. On board this ship was a passenger just recovering from "*chills and fever*" which he had contracted in *Rio de Janeiro*; the length of the voyage from Montevideo to Havana was fifty-four (54) days. Forbes remained five and a half days in Havana but did not pass a singe night ashore; from Havana he came to New Orleans in eight days, including the detentions at quarantine station, on the steamship Marco Aurelio, Capt. Morgan. The vessel landed in Algiers, but Forbes crossed over on this side of the city on Tuesday, June 20, and sought for lodging at No. 97 North Peter street, house kept by a Mrs. Viana, where he remained until Wednesday morning, when he went on board the steamer Commander, of Liverpool, and was set to work painting the ship. On Thursday, June 22, at 8 o'clock a. m., while working, he was seized by a violent chill, followed by high fever; he then returned to his boarding house, No. 97 North Peter street, and remained there without medical assistance until Sunday morning, June 25, when he was sent to the Charity Hospital. At the time of his admission to the Chirity Hospital, he was very weak and jaundiced.

Tuesday morning, August 1, the temperature in the axilla was 102° F.; pulse 99. Patient again vomited bilious matters flecked with brown specks and showed signs of jaundice, with red and injected eyes. The attending physician then thought the case was so much like yellow fever, that soon in the afternoon he reported the matter to the President of the Board of Health.

At two o'clock p. m., Doctor Joseph Jones, President of the Board of Health, was at the patient's bedside and found a temperature of 102° F. and a pulse of 116; patient was delirious kept his eyes and mouth tightly closed and exhibited much nervous agitation; the surface of the body was jaundiced; gums red and swollen; by means of catheter the bladder was emptied of four ounces of a high-colored turbid urine, which, on being tested, exhibited the presence of albumen and showed a specific gravity of 1012. The patient died at six o'clock the same evening.

A post-mortem examination was held on Wednesday morning, August 2, at nine o'clock, at which were present Drs. Joseph Jones, G. K. Pratt, and C. Faget, Sr., of the Board of Health; Dr. S. E. Chaillé of the National Board of Health, and Dr. V. C. Frogne, the attending physician. After due deliberation, and without hesitation, the case was pronounced to be one of yellow fever.

The President of the Board of Health at once sent to Dr. Atkinson, President Board of Health, Nashville, Tenn.; to Dr. R. M. Swearingen, State Health Officer of Texas, at Austin; to Dr. W. D. Kelly, President of the Galveston Board of Health; to Dr. Johnson, Secretary of the State Board of Health of Mississippi, at Jackson; to Dr. Fournier, Health Officer of Mobile; to Governor McEnery, at Baton Rouge, the following telegram:

A case of yellow fever reported at No 25 Enghien street, Third District, yesterday at two p. m. Died during the night. The board has taken all necessary measures of disinfection, fumigation and isolation. No other case known in the city. City healthy and in good sanitary condition. Death rate per 1000 whites, 25.61.

JOESPH JONES, M. D., President Board of Health

At the same time the following instructions were issued to Dr. E. J. Mioton, the Sanitary Inspector of the Third District.

1. Disinfect and fumigate the house and yard and surroundings of No. 25 Enghien street.
2. Destroy by fire the bed, bedding, bed-clothes and every apparel of Johannes Stroh, who died of yellow fever last night
3. Allow no gathering of people around No. 25 Enghien street.
4. Cause the immediate burial of the body of Johannes Stroh.
5. Place your officers in charge of No. 25 Enghien street, and of the surrounding blocks, and carry forward systematic inspection and disinfection, throughout this section of the city.
6. The Sanitary Inspector should attend to the execution of these measures in person and report all facts immediately to the Board of Health.

I send man and cart, one barrel of carbolic acid, one half barrel of sulphur and four barrels of copperas. I have ordered Sanitary Policemen Wiltz and Blanchard to report to you for duty.

JOSEPH JONES, M. D., President Board of Health.

All these instructions were rigidly enforced and carried out. The fumigation and disinfection of premises conducted in the manner described in Forbes' case.

THIRD CASE—ALEXANDER ENGLUND.

Alexander Englund, aged twenty-nine, born in Finland, carpenter by trade, arrived in this city from Cardiff, Wales, May 21, 1882, and had always resided at No. 85 North Peters street, in the block next to that where seaman Forbes was taken sick with yellow fever. The patient took sick at 8 o'clock on the eighth of August, and was given a hot foot-bath and a dose of castor oil by the people of the house; on the morning of the ninth he was taken to the Charity Hospital, where his temperature was found to be 104° F. and pulse 90; at 3 p. m., temperature 104° F. and pulse 80; at night temperature 103° F. and pulse 59.

Englund died on the fifteenth of August, in the evening, at about 4 o'clock.

It appears that Englund was working in repairing buildings in the same block of houses in which he lived; he took sick on the eighth, at night, was taken to the hospital on the ninth, in the morning, where his case was officially pronounced to be one of yellow fever of a mild type. For several days the patient was reported to be free from dangerous symptoms, and was believed to be doing well; but in the last day or two his symptoms increased in severity, black vomit appeared and the patient succumbed to the attacks of the disease.

In all three cases, all the necessary measures of sanitation, fumigation and disinfection were observed, not only in the premises where cases had occurred, but also in all the houses within six blocks right, six left, and six back of that in which cases had taken place; we were greatly aided and assisted in the work by the able services of the sanitary police officers of the First, Second, and Fourth Districts; the Auxiliary

Sanitary Association had kindly furnished us with the services of three men and a cart; the city authorities had sent us a large supply of copperas, lime, sulphur and carbolic acid, also two carts and eight men.

I must here extend my most cordial thanks to Dr. R. A Bayley, Sanitary inspector of the First District, and to Dr W. R. Mandeville, Sanitary Inspector of the Fourth District, for the most valuable services they have rendered me in sharing with me the supervision and responsibility of our work of disinfection and sanitation of the infected portion of the district.

The following is the list of the disinfectants used:

Sulphate of iron (copperas)	50 barrels
Lime	30 barrels
Carbolic acid (Calvert's No. 5)	10 barrels
Sulphur	3 barrels

TABLE ILLUSTRATING THE DEATHS IN THE FOURTH DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1882.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	3	....	2	1	2	....	....		1	3	5	3	..	1	4	....	2	....	5	...	1	1	2	2	27	11	38
Typhoid Fever	....	....	1	....	...	....	....	....	3	2	1	....	1	....	4	....	...	...	....	..	1	....	3	....	14	2	16
Scarlet Fever	....	...	....	...	....	....	....	....	..	...	..	....	1	...	....	....	....	....	...	....	....	....	2	....	3	...	3
Measles	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	1
Small-pox	3	3	3	3	11	4	3	4	7	3	6	2	4	3	2	2	3	3	9	2	4	3	11	4	66	36	102
Diphtheria	....	...	....	..	....	...	....	....	1	..	....	....	1	....	....	..	1	...	2	....	1	...	1	....	7	....	7
Diarrhœal Diseases	....	....	1	1	....	....	1	..	2	3	3	..	3		..	....	..	....	....	....	1	....	....		11	4	15
Congestion of the Brain	..	....	....	...	....	....	....	....	..	..	..	....	2	2	1	....	..	....	....	..	....	....	4	5	7	7	14
Sunstroke	....	....	....	....	....	....	....	....	....	...	1	....	....	....	....	....	....	....	....	....	1	....	....		2	....	2
Convulsions	2	....	....	3	....	1	3	2	2	3	7	....	....	....	1	1	5	1	1	....	5	....	4	...	30	11	41
Phthisis Pulmonalis	1	...	1	..	....	....	1	....	....	....	3	1	....	...	1	....	2	....	1	1	....	....	2	1	12	3	15
Deaths from all other causes	28	12	24	9	27	4	31	10	32	9	26	17	20	10	18	14	12	5	28	13	30	11	37	12	313	126	439
Total number of Deaths	37	15	32	17	40	9	39	16	48	23	52	23	32	16	31	17	25	9	46	16	44	15	67	24	493	200	693
Death rate per 1000 Inhabitants per annum. White	14.49		12.52		15.67		15.28		18.81		20.37		12.52		12.14		9.79		18 02		17.24		26 25		16.09		.....
Colored	26.05		29.52		15 63		27.78		39.94		39.94		27.78		29.52		15.63		27.78		26.05		41 67		28.94		.....
Total	16.62		15.66		15.66		17.58		22.59		23 97		15.34		15.34		11.13		19.82		18.86		29.09		18.46		.....
Number Still-born	1	1	1	1	3	3	3	3	4	1	1	2	3	3	3	3	4	3	4	1	3	1	2	2	30	24	54

EXTRACT FROM THE REPORT OF WM. R. MANDEVILLE, M. D., SANITARY INSPECTOR, FOURTH DISTRICT, NEW ORLEANS, 1882.

OFFICE SANITARY INSPECTOR, FOURTH DISTRICT,
NEW ORLEANS, LA. January 1, 1883.

Joseph Jones, M. D., President Board of Health, New Orleans, La.:

Sir—I have the honor to transmit my annual report of the sanitary condition of the Fourth Municipal District and the work accomplished in connection therewith during the past year. This district ranks as third in the city, in the number of its population. The distinction of the classes of this population is more marked than that of the Second Municipal District, in which I had the honor of serving under your board until the fifteenth of last April, when I was transferred to this field of labor. The large number of elegant residences, with their ornamental grounds, which, ranging through the middle portion of the district, from its upper to its lower limit, have won for it the title of the "garden district," give evidence of the culture and refinement of its wealthier inhabitants. The front portion, from the river to Magazine street, is occupied by a thrifty and enlightened class of laborers, men who work in cotton presses, and in handling the staple along shore, and whose profitable labor, while it renders them vigorous and robust in constitution, furnishes them with the means of making their houses clean and comfortable abodes of health. With these advantages it would seem that we might look for a generally healthy condition in the district, even though we were unaided by the wise measures and expenditures of your honorable and efficient board. The advance of knowledge has given to hygiene the place formally occupied by the art of medicine; prevention has taken the place of cure; and it has been found cheaper for the community to ward off pestilence by the outlay of a few thousands of dollars, in the purchase of disinfectants, and the payment of proper sanitary officers, than to lose thousands of lives and millions of money, by neglecting to co-operate with the proper sanitary authorities of the State in providing measures for their safety.

The year which has just been added to the past, ought to be considered a notable one for our community. With the dreaded scourge to the right and left of us, and in front of us, baffling the skill of the *National Board of Health*, we have escaped; and when the fever was imported and made its appearance among us, it was instantly extirpated. With pestilence all around on our circumference, we stood safe in a charmed centre. Surely confidence should be reposed in those who live by curing disease, and yet devote their time and attention to its prevention and the diffusion of the knowledge of physiology and hygiene among the masses.

SMALL-POX.

One of the best illustrations of the extent to which ignorance and carelessness nullify the utility of advances in knowledge of methods for the prevention of disease, is found in the fact that small-pox still appears as a local epidemic, and sometimes with great mortality. If anything is known in preventive medicine, it is that this loathsome disease may be easily and certainly prevented in almost every case, and that it should never appear on the death register; yet to obtain such an universal and satisfactory vaccination and revaccination of each individual as will give this security, there is necessary the decided and persistent interference of the government to an extent which has not yet been provided in this country. These remarks are specially applicable at this moment, as this dread disease has suddenly acquired a strong hold in this district. There have occurred sixty-one cases, of which thirty-four were white and twenty-seven colored. There were fourteen deaths. It is safe to say that, had vaccination been practiced in these cases at the proper time, nine-tenths of them might have escaped this loathsome disease.

VACCINATION.

The diminution in the death rate since Jenner's discovery robs small-pox of most of its terrors; and instead of its being a scourge which frequently sweeps over thousands of miles within an incredibly short space of time, it has not for many years been beyond the control of intelligent medical efforts. Modern statistics show that the modification of the disease by vaccination has been very decided. The proper management of the disease depends upon a perfect co-operation of the public, the general medical profession and the sanitary authorities, and promptness in making known the existence of a case is the first necessity. The concealment of cases, and prejudice against vaccination, on the other hand, have much to do with the propagation of the disease as well as with its fatality, and it is but just and proper, where medical men are negligent in reporting their connection with a case that a fine should be imposed upon them.

In the year 1881, there were but 247 persons vaccinated at this office, where for the year 1882 there were vaccinated 1010 persons, of whom 284 were white and 726 colored. This contrast is very encouraging, as it goes to show that the public at large are rapidly realizing the importance of vaccination. There were 682 of these primary and 323 secondary vaccinations.

SHIPPING.

All vessels in this district were boarded shortly after their arrival. No sickness of an infectious or contagious nature was discovered on any of them. These visits were made regularly from May to October. But few vessels land on this side of the river, most of them being taken to Gretna, as wharfage is much less than on this side.

CEMETERIES.

All the cemeteries have been examined and a number of vaults repaired, especially in the Washington Street Cemetery, where complaint was made during the summer that a number of the vaults leaked and that the smell could be detected by the people living in the vicinity.

LOCAL SANITATION.

In July a *suspicious* case of yellow fever occurred at No. 1010 Tchoupitoulas street, a German, Louis Dischler by name. The man was a hard drinker, and had been sick ten days; he was removed to Charity Hospital, and died the day after. A post-mortem was held and the man was found to have died from intense jaundice. A minute microscopical examination of all the organs was made by myself, but nothing of a pathological nature could be found indicative of yellow fever. A thorough disinfecting of the entire neighborhood was instituted, from Magazine to the river front, Felicity to First, and from Washington to Toledano streets.

The number of vaults disinfected was 2634; the number of gutters disinfected was 108; the number of yards cleaned was 25; twenty barrels of copperas, and fifty gallons of carbolic acid were used. Sanitary measures, to be effectual, should be carried out at those times when most people see no special cause for anxiety, and often, therefore, appear to involve unnecessary labor and expense.

During a greater portion of the month of August, I was assigned to duty in the Third District, with officer Allen, to assist Dr. Minton in the fumigation and disinfection of the infected portion of his district, where had occurred two cases of yellow fever.

During the entire month of September, I was assigned to duty as quarantine physician at Lookout Station, with officer Allen of the Fourth District, and Bohner of the First.

All trains from Mobile, and vessels entering Pearl river, were boarded and carefully inspected; passengers and freight from Pensacola were detained or else sent back from where they came. There were, therefore, no inspections made in this district for the month of September and a portion of August.

TABLE ILLUSTRATING DEATHS IN THE FIFTH DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1882.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Small-Pox	....	....	....	....	2	2	2	1	1	....	1	4	1	....	1	....	....	....	....	1	1	....	....	..	9	8	17
Malarial Fevers	....	1	....	....	....	....	....	....	1	....	....	1	1	3	3	1	....	1	1	2	....	....	1	2	7	11	18
Typhoid Fever	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	1	..	....	..	1	1	4	1	5
Scarlet Fever	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	..	....	....	1	....	....	....	....	1	1	2
Measles	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Small-Pox	....	1	2	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	2	4
Diphtheria	....	1	....	....	....	....	....	....	....	2	2	1	....	....	....	....	1	....	....	1	1	2	1	....	5	7	12
Diarrhœal Diseases	...	....	1	...	....	..	....	1	....	2	....	....	..	1	....	....	2	....	....	....	....	....	....	....	3	4	7
Congestion of Brain	....	....	....	....	....	....	....	1	....	....	....	....	....	2	....	....	....	....	....	....	....	1	1	....	1	4	5
Sun-stroke	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	..	....	1	...	3	....	....	....	4	2	6
Convulsions	1	3	2	....	1	1	1	....	1	....	....	...	2	1	1	1	1	....	....	....	....	....	....	3	10	9	19
Phthisis Pulmonalis	1	....	....	1	1	....	1	1	....	....	....	....	....	1	....	1	....	....	....	....	1	1	1	....	5	5	10
Deaths from all other causes	4	1	...	3	1	1	7	3	11	3	1	2	1	7	....	2	....	5	6	....	1	4	4	4	36	35	71
Total number of Deaths	6	7	5	4	5	4	11	7	14	7	4	8	7	15	5	7	5	6	9	5	7	9	9	10	87	89	175
Death rate per 1000 Inhabitants per annum. White	11.80		9.83		9.83		21.63		27 54		7.87		13.77		9.83		9.83		17.70		13.77		17.70		14.26		.....
Colored	21.54		12.31		12.31		21.54		21.54		24.61		46.12		21.54		18.46		15.38		27.69		30.77		22.82		.....
Total White and Colored	15.60		10.80		10.80		21.60		25.20		14.40		26.40		14.40		13.20		16.80		19.20		22.80		17.60		.....
Malarial Fevers	0.10		.....				.....		0.10		0.10		0.40		0.40		0.10		0.30		.....		0.30		1.90		1.80
Phthisis Pulmonalis	0.40		0.20		0.20		0.10		0.10		.....		0.30		0.20		0.10		.....		. ...		0.30		1.80		1.90
Number Still-born Children	...	2	3	1	...	1	1	1	2	...	2	1	...	.....	2	...	...	3	.....		1		1	...	10	11	21

Population—Whites, 6,100; Colored, 3,900. Total, 10,000.

EXTRACT FROM REPORT OF A. M. BERET, M. D., SANITARY INSPECTOR FIFTH DISTRICT, NEW ORLEANS, 1882.

OFFICE SANITARY INSPECTOR. FIFTH DISTRICT.
ALGIERS, Louisiana, January 1, 1883.

Joseph Jones, M. D., President State Board of Health, New Orleans, La.:

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THE OVERFLOW.

The crevasse at the Oak Grove plantation, situated about fifteen miles down the river, and immediate in the rear of Algiers, (about seven miles in a straight line) occurred in the month of April, and the bac water from it soon encroached upon the populated portion of the district until it reached in the upper pa the levees on the Mississippi River, necessitating the throwing up of a protection levee, so as to at le keep the most thickly inhabited part from being flooded. This was effectually consummated by t additional placing of a drainage machine at this levee at the intersection of Verret and Jackson streets, which means all the drainage and sipeage waters were kept from accumulating. The crevasse was closed, and the water covered the entire area until the falling of the river, when it gradually disappeare It is quite natural to suppose that the health of the district after such an extensive overflow, last throughout the entire summer, would be seriously affected, and the mortality in the district be very heav but, to my surprise, I am able to state that Algiers has been, and is now, the healthiest district of the c of New Orleans, the death-rate amounting to only 17.60 per 1000 inhabitants. (See table of mortality).

DEATHS FROM ALL CAUSES IN THE SIXTH DISTRICT, CITY OF NEW ORLEANS, DURING 1882.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.	
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.
Malarial Fevers								1	1	1	3				3	2					4	2	1		12	6
Typhoid Fever							1		1				1		1										5	1
Scarlet Fever																										
Small-pox													2													2
Diphtheria					1																1				2	
Diarrhœal Diseases	1		1		1	1	5		3	4	4	1	1		1		2	3	1	1	2	2	3		25	12
Congestion of Brain				1			1		1		1				1						1		1		6	1
Convulsions											1	1		1		1		1							1	4
Phthisis Pulmonalis	1	2	2	3		2	3	1	1	1	2	1		1	6	1	1		3		4	2	5		28	14
Deaths from other diseases	9	4	5	1	11	11	11	6	8	4	17	7	16	6	7	9	7	6	14	5	16	11	16	5	137	75
Total Number of Deaths	11	6	8	5	13	14	21	8	15	10	28	10	18	10	19	13	10	10	19	6	28	17	26	6	216	115
Death rate per 1000 inhabitants per annum. Whites	11.00		8.00		13.00		21.00		15.00		28.00		18.00		19.00		10.00		19.00		28.00		26.00		21.60	
Colored	17.65		14.71		41.19		23.54		29.42		29.42		29.42		38.25		29.42		17.65		50.02		17.65		28.20	
Total	12.68		9.70		23.54		21.57		18.65		28.36		20.89		23.88		14.96		18.65		33.68		23.88		20.65	

TABLE ILLUSTRATING DEATHS IN THE SEVENTH DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1882.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers		....	1	1	....	..	....	..	1	1	1	..	....	2	1	1	....	3	....	1	2	1	....	...	6	10	16
Typhoid Fever	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	1	1	....	1	1	2	3
Scarlet Fever	..	....	....	..	....	....	....	....	....	....	..	..	....	..	....	....	....	....	....	....	....	....	....	....	....	....	.....
Small Pox	....	....	....	....	....	1	....	....	....	...	..	..	....	..	....	....	....	1	....	1	....	1	....	....	....	....	4
Diphtheria	..	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Diarrhœal Diseases	...	...	....	....	1	....	....	1	1	....	....	1	....	2	....	....	1	1	1	1	..	1	1	...	5	7	12
Congestion of the Brain	....	....	..	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	1	..	2	1	3
Convulsions	....	....	1	....	....	....	1	..	2	1	....	1	....	1	1	....	1	2	1	....	....	....	....	....	7	5	12
Phthisis Pulmonalis	....	....	2	..	1	..	1	1	1	....	1	....	1	..	....	....	....	....	..	....	..	..	....	....	7	1	8
Deaths from all other causes	1	4	3	4	....	6	3	3	2	6	9	4	5	3	6	6	3	....	3	6	3	1	1	5	39	48	87
Total Number of Deaths	1	4	7	5	2	7	5	5	7	8	11	6	7	8	8	7	5	7	5	9	6	6	3	6	67	78	145
Death rate per 1000 Inhabitants per annum. White	3.84		26 88		7.69		19 20		26.88		42.24		26 88		30.72		19 20		19.20		23.04		11.53		21.44		
Colored	15.42		19.28		26 99		19.28		37.19		23.13		37.19		26.99		26 99		34.70		23.13		23.13		25 06		
Total White and Colored	9 62		23.09		17.31		19 .24		28.86		32.71		28.86		28 86		23.09		23 73		23.09		17.31		23.25		

MORTALITY OF NEW ORLEANS DURING 1882.

In addition to the data already recorded illustrating the mortality of 1882 we present the following:

DEATHS IN NEW ORLEANS DURING 1882, CLASSIFIED BY AGES, SEX AND COLOR.

AGE.	Whites.		Colored.		Total White and Colored.		Grand Total.
	Males.	Females	Males.	Females	Males.	Females	
Under one year	398	293	230	186	628	479	1107
1 to 2 years	88	81	51	58	139	139	278
2 to 5 years	82	90	82	72	164	162	326
5 to 10 years	82	46	58	51	140	97	237
10 to 15 years	51	31	46	30	97	61	158
15 to 20 years	44	49	57	64	101	113	214
20 to 25 years	108	84	95	66	203	150	353
25 to 30 years	107	90	76	56	183	146	329
30 to 40 years	246	150	140	130	386	280	666
40 to 50 years	274	142	117	88	391	230	621
50 to 60 years	277	141	93	89	370	230	600
60 to 70 years	219	133	91	87	310	220	530
70 to 80 years	106	101	50	82	156	183	339
80 to 90 years	20	39	22	38	42	77	119
90 to 100 years	2	7	11	9	13	16	29
100 years and upwards	.....	1	5	6	5	7	12
Unknown	.....	.....	1	3	1	3	4
Total	2104	1478	1225	1115	3329	2593	5922

Total deaths 1882. Males, whites, 2104; colored, 1225. Total males, 3329. Females, whites, 1478; colored, 1115. Total females, 2593. Grand total, 5922. Total whites: 3582; total colored, 2340.

Average daily mortality in New Orleans during the year 1882, 16.22.

Lowest daily mortality in first six months of 1882, January 19, when only six deaths occurred.

Highest daily mortality in first six months of 1883, April 29, when thirty-four deaths occurred.

Lowest daily mortality of last six months of 1882, on August 11, and October 1, when five deaths were recorded upon each of the days specified.

Highest mortality during the last six months of 1882, October 14, when thirty deaths occurred.

The highest daily mortality occurred on the twenty-ninth of April, and the next highest on October 14.

The lowest daily mortality occurred on August 11, October 1 and January 19.

The flushing of the gutters with Mississippi River water, under the auspices of the New Orleans Auxiliary Sanitary Association, sustained by the pecuniary assistance afforded by the honorable Common Council and by the voluntary contributions of the citizens, has without doubt, been the means of removing considerable quantities of filth toward the rear of the city, and into the drainage canals, by means of the gutters running perpendicularly to the river.

It may be stated as a general proposition, that all gutters running parallel with the Mississippi River were and are, at the end of 1882, in bad sanitary condition.

The absurd and unsanitary and expensive system of raking up the foul mud and stinking contents of the gutters into the streets, to await the action of the next rain, still prevails with the Department of Improvements, despite the protests of various Boards of Health.

At the time of the change in the municipal government, the sanitary condition of New Orleans was an exact reflexion of the exhausted condition of her treasury, and corresponded with her unlighted streets and unpaid police.

Whether a change in the *form* of government, without any material change in the rulers, will rectify monetary, legal and sanitary evils, must be determined by the great revealer of all things—Time.

It is worthy of note that a low death rate has been enjoyed by the white inhabitants of New Orleans, during a period in which there has been no system of underground sewerage.

It is also evident that if the white population has enjoyed unexampled health during the past four years, the supply of *water* could have been neither very impure nor very deficient.

RELATIONS OF THE RAINFALL OF 1882 TO THE MONTHLY MORTALITY.

MONTH.	Rainfall. Cubic Inches.	Mortality. Total Deaths.	MONTH.	Rainfall. Cubic Inches.	Mortality. Total Deaths.
January	4.59	465	July	6.84	460
February	4.04	417	August	9.47	443
march	0.92	465	September	1.59	400
April	4.83	539	October	2.16	489
May	6.83	589	November	1.98	506
June	2-71	561	December	4.27	585

It is evident from the following statistics :

1. That no fixed relation can be established between the rate of mortality and th rainfall.

2. The lowest mortality occurred in the month of September, when only 1.59 inch of rain fell.

The highest mortality occurred in the months of May and December ; the rainfall May being 6.83 ; and the total mortality 589.

3. The drouth occasioned by the small rain fall of the months of September, Octob and November, and the consequent exhaustion of the smaller cisterns, much to the d comfort of washer-women and the inhabitants of crowded tenements, was seized up and exaggerated by interested parties, and by the enemies of the Board of Health, inflame the popular mind with the idea that suffering, disease and death were bei caused by the scarcity of water, and that the Board of Health of the State of Louisia was responsible for the alleged sufferings, of the people.

The Board of Health has, in its accurate statistics, the means of exposing this calumn

It is well known that this Board has advocated the supply of pure water in abundan from various sources, of fresh and cheap meats, for the benefit of the citizens of t parish of Orleans, and that it has been inflexibly opposed to all monopolies, and uniformily condemned all sensational statements from any and every quarter.

DEATHS IN NEW ORLEANS DURING 1882, CLASSIFIED BY RACE AND GENERAL DIVISIO OF DISEASES.

CLASS OF DISEASES.	White.	Colored	Gr To
General diseases, including fevers, phthisis pulmonalis and small-pox	1448	1030	2
Diseases of the nervous system	554	316	
Diseases of the respiratory system	265	202	
Diseases of the digestive system	577	253	
Diseases of the circulatory system	177	150	
Diseases of the urinary and generative organs	92	73	
Affections connected with parturition	18	10	
Diseases of the organs of locomotion	5	11	
Diseases of the cellular and cutaneous systems	8	2	
Conditions not necessarily associated with general or local diseases	266	209	
General injuries	85	47	
Local injuries	22	12	
Tumors, non-malignant	7	4	
Congenital malformations	13	7	
Suicide	32	3	
Killed or wounded	13	11	
Total	3582	2340	

DEATHS FROM SOME OF THE PRINCIPAL DISEASES IN NEW ORLEANS, DURING THE YEAR 1882.

Disease (General Diesases.)	White.	Colored.	Total.	Disease (General Diseases.)	White.	Colored.	Total.
Small-pox	116	299	415	Puerperal fever	10	3	13
measles	3	0	3	Acute rheumatism	6	3	9
Scarlatina	41	5	46	Chronic rheumatism	6	3	9
Cerebro spinal fever	6	2	8	Syphilis	13	13	26
Enteric or typhoid fever	52	22	74	Syphilis congenital	4	4	8
Simple continued fever	3	2	5	Cancer of the breast	16	3	19
Yellow fever	4	0	4	Cancer of the liver	16	0	16
Intermittent fever	7	5	12	Cancer of the stomach	19	8	27
Remittent fever	32	25	57	Cancer of the womb	24	11	35
Congestive fever	111	48	159	Tubercular meningitis	7	6	13
Typho-malarial fever	36	10	46	Phthisis Pulmonalis	507	350	857
Malarial fever not classified	85	60	145	Tabes mesenterica	113	57	170
Cholera infantum	66	20	86	General dropsy	10	21	31
Diphtheria	37	5	42				
Whooping cough	5	1	6	Total General Diseases	1448	1030	2478
Leprosy	2	2	2				

Under the class of general diseases, we propose to notice briefly, first the malaria fevers, scarlatina and diphtheria, reserving the consideration of phthisis, small-pox and yellow fever, for special record and discussion.

MALARIAL FEVER OF 1882.

During the first six months, of 1882, a marked increased in the mortality from the various forms of malarial fever occurred in the month of June.

Thus, during the six months ending the thirtieth of June, intermittent fever caused 4; remittent, 24; congestive, 70; typho-malarial, 24; malarial, not classified, 44; total from various forms of malarial fever, 160.

Deaths in the month of June, intermittent fever, 1; remittent, 6; congestive, 25; typho-maiarial fever, 6; malarial fever, 15; total 53.

Nearly one-third of the deaths from malarial fever occurred in June.

During the last six months of 1882, there was an increase in the deaths from malarial fevers, thus:

	Whites.	Colored.	Total.		Whites.	Colored.	Total.
Intermittent fever	6	2	8	Typho Malarial fever	17	5	22
Congestive fever	69	20	80	Malarial fever (unclassified)	61	40	101
Total					153	67	220

It will be observed that the colored race suffered equally, if not to a greater extent, from the destructive effects of the various forms of malarial, paroxysmal, paludal, or marsh fevers.

During the first six months of 1882, of the total deaths caused by the various forms of malarial fever, ninety-four occurred amongst the whites, and seventy-two amongst the colored.

It is evident that, in relation of population, the malarial fevers were relatively more fatal amongst the colored population.

This result is at variance with the opinions of many systematic writers.

A portion of the mortality from malarial fevers amongst the colored population is undoubtedly to be attributed to the fact that this class of the population occupies, to a large extent, the smallest houses in the rear of the city, towards the swamps and marshes.

Improper diet, crowding and the occupation of low, malarial situations, and the want of proper medical attention in many instances, may account for the greater mortality from malarial fevers amongst the colored race.

LOCAL DISEASES.

Disease (Nervous System).	White.	Colored.	Total.	Disease (Nervous System).	White.	Colored.	Total.
Congestion of the brain	53	20	73	Paraplegia	2	1	
Encephalitis	7	1	8	Tetanus, traumatic	35	24	5
Meningitis	50	23	73	Tetanus, idiopathic	1	2	
Softening of the brain	28	12	40	Trismus nascentium	90	82	17
Abscess of the brain	4	1	5	Hydrophobia	4	..	
Apoplexy	68	39	107	Convulsions	3	10	1
Sunstroke	6	..	6	Convulsions, infantile	67	39	10
Spinal Meningitis	10	8	18	Epilepsy	19	1	2
Paralysis, unclassified	25	18	43	Delirium tremens	28	14	4
Hemiplegia	7	6	13	Mania	11	2	1
Total diseases of the nervous system					554	316	87

Of the total number of deaths caused by diseases of the nervous system, it is worth of note that the largest proportion was caused by acute affections of the cerebro-spina system. Thus, the deaths caused by the diseases specified were as follows. Congestio of brain, 73; encephalitis, 8; meningitis, 73; apoplexy, 107; sunstroke, 6; spina meningitis, 18; tetanus, 62; trismus nascentium, 172; hydrophobia, 4; convulsions, 1 infantile convulsions, 106; delirium tremens, 42. Total from these diseases, 684; tot from all other diseases of the nervous system, 96. Trismus nascentium and infanti convulsions caused 278 deaths out of a total of 870; that is, about one-third of th deaths caused by diseases of the nervous system were occasioned by the convulsive di eases of children. Trismus nascentium was relatively much more fatal amongst th colored population.

Diseases (Respiratory System).	White.	Colored.	Total.	Diseases (Respiratory System).	White.	Colored.	Tot
Croup	39	1	31	Asthma	16	9	
Laryngitis	6	3	9	Pneumonia	106	107	
Bronchitis, acute	47	36	83	Pleuritis	5	5	
Bronchitis chronic	29	28	57				
Total diseases of respiratory					265	202	

Of the thirty-one deaths occasioned by croup, only one death occurred amongst t colored population.

Acute bronchitis, pneumonia and pleuritis occasioned 306 deaths, out of a total of deaths from diseases of the respiratory system.

Diseases (Digestive system).	Whites.	Colored.	Total.	Diseases (Digestive system).	Whites.	Colord.	To
Teething	36	24	60	Hernia (Strangulated	4	4	
Gastritis	21	7	28	Hepatitis	34	12	
Gastro-enteritis	21	0	21	Abscess of the liver	15	3	
Enteritis	112	44	156	Cirrhosis of the liver	57	17	
Dysentery	79	31	110	Jaundice	5	4	
Obstruction of the bowels	12	3	15	Peritonitis	17	11	
Diarrhœa	124	75	199	Ascites	6	5	
Total diseases of the digestive system					577	253	

Sixty deaths are recorded as due to *Teething*. A more accurate delineation or divis of those diseases characteristic of dentition is desirable.

Inflammatory affections of the gastro-intestinal canal caused the following numbe deaths: gastritis, 28; gastro enteritis, 21; enteritis, 156; dysentery, 110: diarrhœa, total: 514, out of a grand total of 830 deaths from diseases of the digestive system.

Abscess of the liver occasioned only eighteen deaths: fifteen whites and three colo As abscess of the liver is comparatively frequent among Europeans in tropical clima it has been attributed to the effects of heat, or of alternations of heat and cold. Be occasionally associated with malarious fever and frequently with dysentery, it is s posed that it may be induced by the same causes as those diseases.

The opinion often advanced that abscess of the liver is always secondary to dysen or to ulceration of the bowels has not been sustained by my experience in hospital private practice. The proportion of cases in which liver abscess and dysentery ar sociated is extremely variable; it is more frequent in one year than in another, and at one period of the year than at another. Observation has also shown that there many fatal cases of abscess of the liver, in which the bowels have been found perfe healthy; whilst on the other hand abscess of the liver can scarcely be considered t very frequent in dysentery.

The predisposing causes of abscess of the liver appear to be the abuse of alcol stimulants, irregular habits, exposure and the effects of prolonged heat.

Hepatitis caused forty-six deaths: whites 34, colored 12. It will be observed that acute inflammation of the liver (hepatitis) is by no means an uncommon affection in New Orleans, and its chief causes are, without doubt, exposure to heat and to changes of temperature in this sub-tropical climate, irregular habits of life, spirit drinking and the action of malaria.

Cirrhosis of the liver caused seventy-four deaths; whites 57, colored 17.

Undoubtedly the most common cause of cirrhosis of the liver is abuse of spirituous liquors. Spirits unmixed with water seem to be more potent in causing cirrhosis than wine or malt liquors.

A small proportion of cases may be referred to the prolonged and constitutional action of the syphilitic poison, and some cases have been referred to the immoderate use of spices and coffee, whilst, in rare instances, no cause has been apparent.

From numerous clinical observations and post-mortem examinations, I am convinced that the prolonged action of the malarial poison may result in a cirrhotic condition of the liver of a peculiar nature, attended with the deposit of much pigmentary matter in the lobuli.

Whitout doubt, a portion of the eleven deaths referred to ascites, and of the thirty-one deaths referred to general dropsy, were complicated by cirrhosis of the liver.

Diseases (Circulatory System).	White.	Colored.	Total.	Diseases (Circulatory System).	White.	Colored.	Total.
Pericarditis	4	4	8	Angina pectoris	4	2	6
Dropsy of pericardium	3	1	4	Fatty degeneration of heart	2	4	6
Endocarditis	8	3	11	Rupture of heart	2	..	2
Valvular disease of heart	38	47	85	Aneurism of aorta	12	6	18
Hypertrophy of heart	13	3	16	Heart disease, unclassified	87	86	167
Dilatation of heart	3	..	3				
Total diseases of the circulatory system					177	150	327

Diseases (Urinary and generative organs).	Whites.	Colored.	Total.	Diseases (Urinary an gen'tive organs)	Whites.	Colored.	Total.
Bright's di ease, acute	14	7	21	Calculus	1	..	1
Bright's disease, chronic	59	58	117	Uræmic poisoning	2	..	2
Suppression of urine	..	1	1	Ovarian dropsy	..	1	1
Cystitis	10	2	2				
Total diseases of urinary and generative system					92	73	165

Bright's disease occasioned 138 deaths out of a total of 165, caused by diseases of the urinary and generative system, whilst only a single death was caused by calculus.

The absence of calculous diseases in New Orleans is, without doubt, referable, chiefly, to the extensive use of cistern water:

The large number of deaths occasioned annually by Brights disease should attract the attention of the sanitarian and physician.

The term *Bright's disease* is now universally recognized as generic, and as including at least three different diseases of the kidney, namely: 1 The *inflammatory affection*, affecting the tubules, or the stroma, or both. 2. The *waxy or amaloid affection*, originating in the vessels. 3. *cirrhotic or gouty affection*, originating in the fibrous stroma.

With reference to the ætiology of Bright's disease, the following facts are now generally accepted by those physicians and pathologists, who have carefully investigated this subject.

1. *Of the Inflammatory Form of Bright's Disease.*—Cold is the commonest cause in the adult; acting especially upon those who have been exposed to its influence whilst perspiring. Various blood diseases, while they induce temporary albuminuria, along with their more ordinary symptoms, have renal inflammation as a common sequela. Among these, scarlatina occupies the first place; diphtheria stands next in order, followed by erysipelas, measles, pyæmia, typhus, intermittent, remittent and congestive malarial fevers, acute rheumatism and pneumonia. Many of these maladies being most common in childhood, it follows that in the earlier years of life, they are the chief causes of inflammatory Bright's disease. Pregnancy, heart disease, gout and malaria contribute towards its production in some cases, and the undue use of cantharides, turpentine or alcohol may also be reckoned as causes.

That the malarial poison is capable of inducing active congestion, hæmaturia, albuminuria and structural alterations of the kidneys, has been established by numerous observations. That form of malarial fever characterized by intense jaundice, obstinate vomiting, renal congestion and hæmorrhage, uræmic poisoning and convulsions, is not so frequent in New Orleans as in St. John the Baptist and in St. James parish, and in and around Selma, Ala., and in certain sections of Georgia and Texas.

Malarial hæmaturia illustrates the action of the malarial poison in the most intense degree upon the renal structures. Cases of albuminuria following and accompanying the various forms of malarial fever, were observed during the past three years, and in some instances the patients were brought directly from the swamps on the line of the railroads traversing Tennessee, Mississippi and Texas.

It is well established that the urine of specific yellow fever is characterized by albumen and granular casts; how far this disease may be the cause of the inflammatory form of Bright's disease, has not yet been determined, but the subject is worthy of careful investigation.

2. *Of the Waxy Form*—Constitutional syphilis, phthisis and prolonged suppuration, caries or necrosis of bone, and other exhausting diseases, such as cancer or chronic rheumatism, induce this degeneration.

3. *Of the Cirrhotic Form*—The commonest cause is the abuse of alcohol, particularly in the form of ardent spirits. Gout and lead poisoning are far less frequent causes of the cirrhotic form of Bright's disease.

This form of the disease is, however, met with in people who have neither indulged in alcohol, been exposed to lead, nor suffered from gout. Congestion from cardiac disease has been erroneously held by some authorities to be a cause of the cirrhotic form o Bright's disease.

DISEASE. (Affections connected with parturition).	White.	Colored.	Total.	DISEASE. (Affections connected with parturition).	White.	Colored.	Total.
Difficult labor (cause stated)	1	1	2	Puerperal septicaemia	2	..	
Hæmorrhage	4	2	6	Exhaustion after delivery	2	..	
Metroperitonitis	2	3	5	Vomiting in pregnancy	1	..	
Puerperal convulsions	6	4	10	Inflammation of breast	1	..	
Total affections connected with pregnancy					18	10	

DISEASE. (Conditions not necessarily associated with local or general diseases).	White.	Colored.	Total.	DISEASE. (Conditions not necessarily associated with local or general diseases).	White.	Colored.	Total.
Premature birth	28	14	42	Accidental poisoning by—			
Difficult birth	1	1	2	Opium	1	..	
Umbilical hæmorrhage	5	2	4	Creosote	1	..	
Old age	33	31	64	Oxalic acid	1	..	
General debility	1	2	3	Laudanum	1	1	
Infantile debility	51	58	109	Carbolic acid	1	..	
Senile debility	107	86	192	Chloral hydrate	1	..	
Inanition	37	14	51				
Total conditions not necessarily connected with local or general diseases					266	209	

DISEASE.	White.	Colored.	
General injuries	85	47	
Local injuries	22	12	
Total general and local injuries	107	59	

Of the general injuries, burns caused deaths, whites, 12, colored 14, total 26; scal whites 4, multiple injuries, whites 14, colored 4, total 18; shock from surgical operatic whites 1, colored 1, total 2; drowning, whites 39, colored 23, total 62.

Of the local injuries, fracture of the skull caused deaths, whites 7; concussion brain, whites 2, colored 2, total 4; compression of brain, whites 2; gun-shot wound heart, whites 1, colored 1, total 2; gun-shot wound of chest, whites 4; gun-shot wou of abdomen, white 1, colored 1, total 2; gun-shot wound of spine, colored 1; gun-sh wound of knee, colored 1; gun-shot wound of back, colored 1; incised wound of abd men, colored 1.

DISEASES (Suicide).	White.	Colored	Total.
By drowning	8	1	9
By hanging	1	.....	1
By shooting	13	2	15
By cutting	1	.....	1
By poison	7	.....	7
By laudanum	1	.....	1
By fracture of skull	1	.....	1
Total suicides	32	3	35
Killed or murdered—			
By shooting	7	4	11
By stabbing	5	4	9
By cutting	.....	2	2
By beating	.....	1	1
By lightning	1	.....	1
Total killed or murdered	13	11	24

TABLE SHOWING MORTALITY FROM SOME OF THE PRINCIPAL DISEASES IN THE FIRST DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1883.

NAMES OF DISEASES.	January.		February.		March.		April.		May		June.		July.		August		September.		October.		November.		December.		Total.		Grand Total.
	W.	O.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W. & C.
Malarial Fevers	10	1	3	4	4	6	6	4	7	2	18	2	17	8	18	1	25	6	27	8	25	6	19	5	179	53	232
Typhoid Fever	2	1	1	1	....	..	....	4	1	..	1	.	....	....	..	...	1	.	1	1	..	...	2	1	9	4	13
Scarlet Fever	1	....	1	1	..	1	1	2	1	..	1	....	....	..	1	....	1	.	....	...	2	...	1	...	10	4	14
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	1
Small-pox	9	17	12	18	10	14	12	11	22	29	9	31	11	17	5	14	3	8	3	5	2	7	....	2	98	173	271
Diphtheria	....	....	....	....	3	..	....	....	....	....	1	....	3	....	....	....	1	.	....	....	....	....	2	....	10	....	10
Diarrhœal Diseases	15	11	7	4	10	6	9	2	17	7	16	5	11	6	7	3	10	7	17	8	34	12	35	5	188	76	264
Congestion of the Brain	2	1	2	....	3	...	3	3	2	3	2	1	4	1	5	1	4	...	4	....	5	....	3	....	39	10	49
Consumption	24	8	24	8	23	10	13	12	16	10	16	6	20	9	15	13	17	18	16	14	23	11	20	12	227	131	358
Pneumonia	10	6	8	10	13	12	10	5	4	4	3	3	1	...	..	1	7	1	1	4	5	3	14	11	76	60	136
Measles	....	....	....	....	....	....	....	....	1	....	4	..	3	....	....	....	....	....	....	....	....	....	....	....	8	....	8
Deaths from all other causes	90	36	85	52	72	40	56	40	70	39	66	33	98	44	56	44	63	43	73	41	93	49	74	50	876	506	1382
Total	163	81	143	98	138	89	110	79	141	94	137	81	148	82	107	77	132	83	142	81	190	86	170	86	1721	1017	2738
Grand total	244		241		227		189		235		218		230		184		215		223		276		250				
Death rate per 1000 population. White	41 97		36.82		35.53		28.32		36.31		35.28		38 32		27.55		34 00		36 56		48 92		43.80		36.93		
Death rate per 1000 population. Colored	63.11		15 06		69.34		61.55		73.25		63.11		63.24		60.00		64.66		63.11		67.01		67.01		66.03		
Death rate per 1000 population. Total white and colored	47.22		46.69		43.77		35.58		45 48		42 19		42.90		35 61		41 61		43.16		53.42		49.51		.....		44.16

Estimated population—White, 46,600; colored, 15,400; total, 62,000.

Note—Deducting from the total mortality of the district, the proportion according to population, of the deaths which occurred in the Charity Hospital, Hotel Dieu and Small-pox Hospital, not belonging to the district, reduces the total mortality of the district to 2064; and the death rate per 1000 population to 33.29.

TABLE SHOWING MORTALITY FROM SOME OF THE PRINCIPAL DISEASES IN THE SECOND DISTRICT, CITY OF NEW ORLEANS, DURING THE YEAR 1882.

NAME OF DISEASES.	January.		February		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Grand Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	1	1	5	3	4	2	...	2	3	3	7	3	4	3	3	3	4	1	7	4	3	3	4	1	45	29	74
Typhoid Fever	1	3	2	..	...	1	...	...	....	....	1	....	1	2	....	....	1	1	....	...	1	1	....	2	7	10	17
Scarlet Fever	1	....	....	....	1	....	1	....	....	....	1	...	...	....	1	....	....	....	....	....	....	....	....	....	5	....	5
Small-pox	....	11	11	17	21	36	28	36	18	22	9	20	7	7	6	6	5	9	....	1	1	2	1	4	107	171	278
Diphtheria	2	....	5	....	1	1	....	1	2	....	1	....	1	1	....	....	2	1	....	1	1	....	2	....	17	5	22
Diarrhœal Diseases	4	4	2	1	2	1	4	1	6	3	9	....	7	5	6	1	7	1	9	2	15	7	10	5	81	31	112
Congestion of Brain	1	....	....	1	....	2	1	2	....	....	....	....	2	....	2	2	1	1	1	....	2	....	1	...	11	8	19
Consumption	10	1	9	2	11	4	5	8	10	5	9	4	6	6	12	9	4	5	7	7	8	9	8	5	99	65	164
Pneumonia	5	8	5	2	7	3	2	3	4	2	2	....	1	1	2	1	4	....	2	3	2	1	5	3	41	27	68
Measles	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	1	....	....	....	1	2	2	4
Deaths from all other causes	36	20	25	22	30	27	32	30	31	18	33	21	34	17	29	18	30	27	37	25	44	20	34	26	395	271	666
Total number of deaths	61	48	64	48	77	77	73	83	74	53	73	48	63	42	62	40	58	46	63	44	77	43	65	47	810	619	1429
Grand total	109		112		154		156		127		121		105		102		104		107		120		112				
Death rate per 1000 — Whites	21.72		22.79		27.42		25.97		26.35		25.99		22.42		22.08		20.65		22.40		27.42		23.14		24.03		
Death rate per 1000 — Colored	39.72		39.72		63.72		68 69		43.86		39.72		34.75		33.10		38.19		36.41		37.24		38.96		42.69		
Death rate per 1000 — Total	28.37		28.09		38.34		38.83		31.62		30.12		26.14		25.39		25.85		26 64		29.87		28.09		.....		29.64

Estimated population for 1883—White, 33,700; colored, 14,500; total, 48,200.

NOTE—Adding to the total mortality of this district the proportion, according to population, of the deaths which occurred in the Small-pox and Charity Hospitals and Hotel Dieu increases the total mortality of the district to 1689, and the death rate per 1,000 population to 35.04.

TABLE SHOWING MORTALITY FROM SOME OF THE PRINCIPAL DISEASES IN THE THIRD DISTRICT, CITY OF NEW ORLEANS, DURING THE YEAR 1883.

DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Grand Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C	W.	C.	W.	C.	
Fevers—																											
Malarial	2		5	1	3	2	1	2	6	2	1	3	5	5	6	3	6	6	3	1	2	1	2	1	42	27	69
Typhoid	2				1		1	1						1					1		1				6	2	8
Scarlet														1							1			1	1	2	3
Small-pox	9	13	19	36	26	86	39	92	26	25	12	25	5	3	5	1	2							1	143	282	425
Diphtheria	1						2			1	1		2		1	2	1	2	3	2	2	1	2		15	8	23
Diarrhœal Diseases	3	2	2	1	4	1	5	1	5	9	12	5	13	4	3	1	3	2	9	3	5	5	7		71	33	104
Congestion of Brain	1	1		1	2		1				1		1		4		1		1		1		1	1	14	3	17
Consumption	3	2	10	4	6	3	1	2	7	6	3	3	7	4	6	3	4	8	3	9	4	12	5	4	59	61	120
Pneumonia	5	7	6	2	2	3	2	4	1	2		4		1		1	4	1	2	1	3	1	3	2	28	29	57
Measles					1				1																2		2
Other causes	45	23	39	18	33	24	40	18	41	25	45	12	35	13	27	23	34	22	40	24	49	22	48	26	476	248	724
Totals	71	46	81	62	78	119	92	121	87	70	75	52	68	32	52	34	55	41	62	40	68	42	68	36	857	695	1552
Grand Total	117		143		197		213		157		127		100		86		96		102		110		104				
Rate per 10 00 population Whites	23.47		26.77		28.54		30.41		28.76		24.79		22.48		17.19		18.18		20.49		22.48		22.48		23.61		
Rate per 10 00 population Colored	42.46		57.23		109.84		111.69		64.61		47.23		29.54		31.38		37.84		36.92		38.77		33.23		53 46		
Rate per 10 00 population Total	29.39		34 80		47.95		51.84		38.21		30.91		24.34		20.93		23 36		24.82		26.77		25.31				31.48

Estimated population for 1883—White, 36,300; colored, 13,000; total, 49,300.

NOTE—Deducting from the total mortality of this district, the proportion, according to population, of the deaths which occurred in the Lazenberg Small-pox Hospital, and adding to the total, the proportion of the deaths belonging to the district, which occurred in the Charity Hospital, Hotel Dieu and City Small-pox Hospital, increases the total mortality to 1661, and the death rate per 1000 population to 33.69

TABLE SHOWING MORTALITY FROM SOME OF THE PRINCIPAL DISEASES IN THE FOURTH DISTRICT OF THE CITY OF NEW OR LEAN DURING THE YEAR 1883.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August		September.		October.		November.		December.		Total.		Grand Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	1	...	2	....	1	...	3	....	2	....	4	1	2	3	2	2	2	2	5	1	2	1	1	....	27	10	37
Typhoid Fever	1	....	1	....	....	1	....	....	1	....	....	....	....	....	1	....	....	....	....	....	1	....	2	....	7	1	8
Scarlet Fever	2	1	....	....	2	....	....	....	1	....	1	....	....	....	2	....	....	....	1	....	....	....	....	....	9	1	10
Small-pox	4	9	4	7	7	4	12	7	6	....	7	5	5	2	9	5	1	....	1	....	....	....	....	....	56	39	95
Diphtheria	2	....	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	3	....	9	....	9
Diarrhœal Diseases	3	1	....	1	2	1	3	1	6	5	13	1	6	....	4	....	7	....	5	2	8	2	3	1	60	16	76
Congestion of Brain	....	....	....	....	2	....	....	....	2	....	....	....	....	1	1	....	....	....	1	1	....	1	....	....	6	3	9
Consumption	4	1	4	4	11	3	8	3	1	....	6	5	5	6	2	2	8	5	8	2	5	10	4	4	66	45	111
Pneumonia	9	2	2	....	5	3	2	2	1	2	1	1	....	....	....	....	2	....	2	....	2	1	2	1	27	12	39
Measles	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	1	....	2	....	2
Deaths from all other causes	34	10	25	12	16	15	25	11	23	11	30	16	27	5	22	12	39	7	32	8	23	9	32	9	328	125	453
Total	59	24	39	24	46	27	54	24	43	18	63	29	45	17	43	22	59	14	55	14	43	24	48	15	597	252	849
Grand total	83		63		73		78		61		92		62		65		73		69		67		63				
Death rate per 1000 population. White	21.45		14.18		16.73		19.64		15.63		22.99		16.33		15.63		21.45		20.00		15.63		17.46		18.09		.....
Death rate per 1000 population. Colored	36.92		36.92		41 54		36.92		27.95		44.61		26 15		33.86		21.54		21.54		36.92		23.08		32.31		.....
Death rate per 1000 population. Total white and colored	24.41		18.52		21.47		22.22		17.69		27.05		18.23		19.12		21.47		20.29		19.70		18 52		.....		20.81

Estimated population for 1883—Whites, 33,000; Colored, 7,800. Total, 40,800.

NOTE—Adding to the total mortality of this district the proportion, according to population, of the deaths which occurred in the Small-pox Hospital, the Charity Hospital and Hotel Dieu increases the total mortality of the district to 993, and the death rate per 1,000 population to 24,33.

TABLE SHOWING MORTALITY FROM SOME OF THE PRINCIPAL DISEASES, IN THE FIFTH DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1883.

DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Grand Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	
Malarial Fevers			1			4	1	1		2		3		1	2	1	1		1		1		2	1	8	13	22
Typhoid Fever	1																			1	1				2	1	3
Scarlet Fever															1										1		1
Small-Pox	1					4	3	6	7	18	15	14	12	8	3	9		11	1	4	11	6	3	1	56	81	137
Diphtheria																											
Diarrhœal Diseases			1						3	1	1				2	1			1			1	2		10	3	13
Congestion of Brain							1						1						1						3		3
Consumption				1		2	2	1	2	1	1	1	1		2		1	3	2	2		1	1	4	12	16	28
Pneumonia						1	1		1											1					2	3	5
Measles																											
Other causes	8	4	5	1	2	2	9	3	6	4	3	4	9	3	3	4	6	1	6	4	10	4	5	3	72	37	109
Total	10	4	7	2	2	13	17	11	19	26	20	22	23	12	13	45	8	15	12	12	23	12	13	10	167	154	321
Grand total	14		9		15		28		45		42		35		28		23		24		35		23				
Rate per 1000 population — White	26.54		15.85		4.54		38.49		43.02		45.26		52.07		27.54		18.11		29.02		52.07		27.54		31.51		
Rate per 1000 population — Colored	11.16		5.58		36.28		30.69		72.56		61.39		33.49		41.86		41.86		33.49		33.49		27.89		35.81		
Rate per 1000 population — Total	17.50		11.25		18.75		35.00		56.25		52.69		43.75		35.00		28.75		30.00		43.75		28.75				33.43

Estimated population—White, 5.300; colored, 4.300; total, 9,600.

NOTE—Adding to the total mortality of the district, its proportion, according to population, of the deaths which occurred in the Charity Hospital, Hotel Dieu and Small-pox Hospital, increases the total mortality to 374, and the death-rate per 1000 population to 38.95.

TABLE SHOWING MORTALITY FROM SOME OF THE PRINCIPAL DISEASES IN THE SIXTH DISTRICT OF THE CITY OF NEW ORLEANS DURING THE YEAR 1883.

NAMES OF DISEASES.	January.		February.		March.		April.		May.		June.		July.		August		September.		October.		November.		December.		Total.		Grand Total.
	W.	O.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	1	....	....	....	1	2	....	..	....	....	1	1	....	....	....	....	5	3	2	2	2	....	2	.	14	8	22
Typhoid Fever	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	..	..	....	....	....	....	....	.....
Scarlet Fever	....	....	....	....	2	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	..	....	4	....	4
Small-pox	1	....	2	2	8	4	8	7	1	1	1	1	3	3	1	1	....	....	....	....	....	....	2	....	27	19	46
Diphtheria	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	1	....	..	..	3	....	3
Diarrhœal Diseases	2	....	....	....	1	1	1	....	5	1	7	2	1	1	3	....	3	2	....	....	2	1	4	2	29	10	39
Congestion of the Brain	..	....	....	....	....	....	....	....	2	....	....	....	1	....	1	....	..	1	1	..	....	....	2	....	7	1	8
Consumption	3	....	4	2	5	2	3	2	1	1	3	1	1	....	2	1	2	1	1	2	7	1	3	1	35	14	49
Pneumonia	....	1	2	3	5	2	1	....	2	1	1	....	1	....	2	....	....	....	3	....	1	....	4	....	22	7	29
Measles	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Other causes	13	5	8	2	9	7	11	3	10	7	15	5	14	4	12	8	16	7	19	11	20	11	21	8	168	78	246
Total	20	6	16	9	33	18	25	12	21	11	28	11	21	8	21	10	26	14	26	15	34	13	38	11	309	138	447
Grand total	26		25		51		37		32		39		29		31		40		41		47		49		.....		
Death rate per 1000 population. White	18.75		15.00		30.46		23.43		19.68		26.25		19.68		19.68		24.38		24.38		31.87		35 61		24.14		.....
Death rate per 1000 population. Colored	16.00		24.00		48.00		32.00		29.33		29.33		21.23		16.56		37.33		37.33		34.66		29.33		30.66		..
Death rate per 1000 population. Total white and colored	18.03		17.34		35.27		25 66		22.19		27.05		20.12		21.50		27.74		27.74		32.60		33.98		.....		25.84

Estimated population—White, 12,800; colored, 4,500; total, 17,300.

NOTE—Adding to the total mortality of the district, the proportion according to population, of the deaths which occurred in the Charity Hospital, Hotel Dieu and Small-pox Hospital, increases the total mortality to 527; and the death rate per 1000 population to 30.46.

TABLE SHOWING MORTALITY FROM SOME OF THE PRINCIPAL DISEASES IN THE SEVENTH DISTRICT, OF THE CITY OF NEW ORLEANS DURING THE YEAR 1883.

DISEASES.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Total.		Grand Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W&C
Malarial Fevers	....	1	....	....	3	....	....	....	....	1	..	1	....	....	2	1	2	3	1	3	4	....	....	....	12	10	22
Typhoid Fever	1	....	....	....	..	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	....	1	....	2	....	2
Scarlet Fever	....	....	1	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....	....	....	1	....	..	....	2	....	2
Small-pox	....	2	....	3	....	1	..	....	....	....	....	....	1	....	2	....	1	1	1	1	1	....	....	....	6	8	14
Diphtheria	....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	..	....	....	....	....	....	....	....	....	....	....	....
Diarrhœal Diseases	....	1	....	....	1	..	1	....	1	....	3	1	1	..	1	....	....	1	1	1	1	1	....	....	10	5	15
Congestion of the Brain	....	....	....	....	....	....	....	....	....	....	2	....	....	..	1	....	1	....	....	....	....	....	....	....	4	..	4
Consumption	1	....	....	2	1	....	....	2	....	2	..	....	....	1	..	3	1	1	....	....	....	..	....	1	3	12	15
Pneumonia	3	....	1	1	....	2	....	....	....	2	....	....	..	..	....	1	....	....	....	1	2	1	2	....	8	8	16
Measles	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Other causes	4	1	2	4	3	6	2	7	2	1	3	4	3	5	6	8	2	6	4	2	8	4	5	4	44	52	96
Total	9	5	4	10	8	9	3	9	3	6	8	7	5	6	12	13	7	12	7	8	17	6	8	5	91	96	187
Grand total	14		14		17		12		9		15		11		25		19		15		23		13		....	....	....
Rate per 1000 population — White	32.73		14.54		29.09		10.90		10.90		29 09		10 90		43.63		25 45		25.45		61.82		29.09		27.58		.....
Rate per 1000 population — Colored	17.14		34.28		30.86		30.86		20 57		24 00		20.57		44.57		41.14		27.42		20.57		17.14		27.42		..
Rate per 1000 population — Total	24.70		24.70		30.00		21.18		15.88		26.47		19.41		44.11		33 53		26 47		40.59		23.03		....	....	27.50

Estimated population for 1883—White, 3,300; colored, 3,500; total, 6,800.

NOTE—Adding to the total mortality of the district, the proportion according to population, of the deaths which occurred in the Small-pox Hospital, Hotel Dieu and Charity Hospital, would increase the total mortality to 210, and the death-rate per 1000 population to 30.89.

TABLE SHOWING MORTALITY IN THE CITY OF NEW ORLEANS DURING THE YEAR 1883 BY MONTHS, ALSO THE RATE PER 1,000 POPULATION PER ANNUM.

MONTHS.	Mortality.			Rate Per 1,000 Population.		
	White.	Colored.	Total.	White.	Colored.	Total.
anuary	393	214	607	27.57	40.76	30.89
ebruary	354	253	607	24.89	48.19	30.89
larch	382	352	734	26.81	67.04	37.64
pril	374	339	713	26.24	64 58	36.56
lay	388	278	666	27.23	52.94	34.35
une	404	250	654	28.34	47.81	33.54
uly	373	199	572	26.17	37.91	29.33
ugust	310	211	521	21.74	40.19	26.71
eptember	345	223	568	24.20	42.48	29.07
ctober	367	214	581	25.75	40.56	29.78
ovember	452	226	678	31.71	43.04	34.76
ecember	410	212	622	28.77	40.38	31.89
Total	4552	2971	7523	26.62	47.16	32.15

NOTE—The foregoing rate of mortality is based upon an estimated population for the city of New Orans, proportioned to the ratio of increase between the years 1870 and 1880—White, 171,000, colored, 63,000; otal, 234,000.

TABLE SHOWING MORTALITY FROM SOME OF THE PRINCIPAL DISEASES OCCURING IN THE CITY OF NEW ORLEANS DURING THE YEAR 1883.

Months.	Small-Pox.			Scarlet Fever			Measles.			Typhoid Fever.			Yellow Fever			Malarial Fevers.			Phthisis Pulmonalis.			Congestion of Brain.			Diphtheria.			Croup.		
	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total	W.	C.	Total
January	24	52	76	4	1	5	....	....	....	8	4	12	....	....	.....	15	3	18	45	12	57	4	3	7	5	...	5	3	.	3
February	48	83	131	2	1	3	....	....	....	4	1	5	....	....	.....	16	8	24	51	23	74	2	2	4	6	....	6	....	....	.....
March	72	149	221	5	1	6	1	....	1	1	2	3	....	....	.....	16	16	32	57	24	81	7	2	9	6	1	7	2	....	2
April	102	159	261	3	2	5	....	...	....	1	1	2	....	....		11	9	20	32	31	63	6	5	11	3	1	4	2	....	2
May	80	95	175	2	....	2	2	....	2	2	....	2	....	...	.....	18	10	28	37	25	62	6	3	9	2	1	3	1	1	2
June	53	96	149	3	...	3	6	2	8	2	....	2	....	....	.....	31	14	45	38	20	58	5	1	6	3	....	3	....	....	.....
July	44	40	84	....	1	1	3	...	3	1	3	4	....	....	.....	28	20	48	40	26	66	9	2	11	6	1	7	1		1
August	31	36	67	5	....	5	1	....	1	1	....	1	....	....	.....	33	11	44	39	31	70	14	3	17	1	2	3	1	....	1
September	12	29	41	1	....	1	....	....	.....	2	1	3	....	....	.....	45	21	66	37	41	78	7	2	9	4	3	7	2	....	2
October	6	11	17	1	....	1	....	1	1	2	2	4	....	....	....	46	19	65	37	36	73	9	1	10	3	3	6	2	....	2
November	15	15	30	5	....	5	....	....	....	4	1	5	1	....	1	39	11	50	47	44	91	8	1	9	6	1	7	1	1	2
December	6	8	14	1	1	2	1	1	2	5	3	8	....	....	.....	30	8	38	41	31	72	7	1	8	9	....	9	3	....	3
Total for the year	493	773	1266	32	7	39	14	4	18	33	18	51	1	...	1	328	150	478	501	344	845	84	26	110	54	13	67	18	2	20

MORTALITY OF NEW ORLEANS, LOUISIANA, DURING 1883, ACCORDING TO GENERAL CLASSES OF DISEASES, ARRANGED ACCORDING TO MONTHS AND RACES.

	January.		February.		March.		April.		May.		June.		Total 6 mos. of 1883.		Total.	July.		August.		September.		October.		November.		December.		Total last six mos. of 1883		Total.	Total 12 mos of 1883.		Total.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.		W.	C.	W.	C.	W.	C.	W.	C	W.	C.	W.	C.	W.	C.		W.	C.	
General Diseases	133	84	143	132	181	205	179	220	191	164	187	151	1014	956	1970	161	111	152	103	139	109	138	94	179	94	123	70	892	581	1473	1906	1537	3443
Diseases of the nervous system	66	31	49	37	48	29	54	34	50	34	73	33	340	198	538	65	30	51	39	60	32	70	46	54	27	63	33	363	207	570	703	405	1108
Diseases of circulatory system	18	6	18	12	23	12	19	13	22	12	14	11	114	66	180	19	9	13	13	14	20	21	12	24	12	22	16	113	82	195	227	148	375
Diseases of the digestive system	48	24	33	8	32	20	30	20	55	18	64	11	262	101	363	55	18	36	15	45	20	53	21	89	31	75	20	353	125	478	615	226	841
Diseases of respiratory system	53	36	42	41	55	40	28	24	20	20	14	13	212	174	386	15	5	15	8	34	15	22	13	37	18	53	31	176	90	266	388	264	652
Diseases of the urinary and generative organs	17	4	19	2	6	6	7	5	9	9	9	7	67	33	100	6	5	6	10	10	5	13	3	9	4	13	11	57	38	95	124	71	195
Affection connected with parturition	2	1	3	1	1	2	1	..	4	1	2	..	13	5	18	5	1	4	..	3	2	1	1	2	2	4	1	19	7	26	32	12	44
Diseases of organs of locomotion	..	..	..	1	2	2	3	..	..	1	..	..	5	4	9	1	3	..	..	1	1	1	1	..	1	1	..	4	6	10	9	10	19
Diseases of the cellular and cutaneous system	1	1	..	..	..	..	..	3	..	1	1	..	2	5	7	1	1	1	1	..	2	2	1	2	..	..	..	6	5	11	8	10	18
Conditions not necessarily associated with local or general diseases	38	18	37	14	20	27	34	11	26	13	26	17	181	100	281	27	13	17	12	28	11	32	13	39	25	41	25	184	99	283	365	199	564
General Injuries	9	5	5	4	7	7	11	7	3	3	9	4	44	30	74	8	1	9	6	8	4	9	3	11	5	3	1	48	20	68	92	50	142
Local Injuries	4	1	2	..	1	1	2	..	2	..	1	2	12	4	16	2	..	2	1	..	..	1	4	2	1	2	1	9	7	16	21	11	32
Human Parasites	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	1	1
Tumors, non-malignant	..	1	..	..	..	..	1	..	..	..	..	..	1	1	2	1	..	1	1	..	..	..	..	1	2	..	2	3	5	8	4	6	10
Congenital malformations	2	2	1	..	..	..	..	..	2	..	2	1	7	3	10	5	1	2	..	2	2	2	1	1	1	2	..	14	5	19	21	8	29
Suicides	2	..	2	1	5	..	3	1	4	..	2	..	18	2	20	1	.	1	..	..	..	.	.	2	3	2	..	6	3	9	24	5	29
Killed or murdered	..	..	..	..	1	1	2	1	.	2	..	..	3	4	7	1	1	..	2	1	..	2	1	..	..	6	..	10	4	14	13	8	21
Total	393	214	354	253	382	352	374	339	388	278	404	250	2295	1686	3981	373	199	310	211	345	223	367	214	452	226	410	212	2257	1285	3542	4552	2971	7523
	607		607		734		713		666		654		3981		3981	572		521		568		581		678		622						

MORTALITY FROM SOME OF THE PRINCIPAL DISEASES IN NEW ORLEANS DURING THE YEAR 1883, CLASSIFIED ACCORDING TO AGE AND COLOR.

DISEASES.	Under 1 year.		1 to 2 years.		2 to 5 years.		5 to 10 years.		10 to 15 years.		15 to 20 years.		20 to 30 years.		30 to 40 years.		40 to 50 years.		50 to 60 years.		60 to 70 years.		70 to 80 years.		80 to 90 years.		Above 90 yrs.		Total.		Grand Total, Whites and Col'd
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	
Yellow Fever							1																						1		1
Malarial Fever	23	15	9	15	21	16	15	16	6	13	10	5	62	22	60	12	49	10	46	7	17	9	8	5	2	5	3		28	150	478
Typhoid Fever					1	1	2	5	4	1	7		8	6	8	2	3	2						1					33	18	51
Scarlet Fever			9	1	6	3	9	2	4		1				2	1			1										32	7	39
Measles	2		2	1	5		4	1				1	1	1															14	4	18
Dyptheria	2	3	6	1	30	6	11	1	1		1			2	1		1				1								54	13	67
Small Pox	43	44	27	46	67	121	75	127	30	50	41	72	81	155	53	77	43	41	21	24	8	9	3	3		2	1	2	493	773	1266
Diarrhœal Diseases	130	37	37	20	23	14	8	5	2	1	5	6	26	10	36	12	39	28	58	17	47	9	30	11	7	3	1	2	449	174	623
Congestion of Brain	16	1	10	3	5	2	4	2	4	1	3	1	5		9	4	7		6	7	10	4	4		1	1			84	26	110
Phthisis Pulmonalis	1	1		2	1	3	2	6	1	5	17	25	129	94	139	86	92	63	58	36	45	15	15	6	1	2			501	344	845
Pneumonia	31	26	22	14	10	11	10	3	2	8	6	8	18	20	18	12	30	13	20	12	20	10	14	6	3			1	204	146	350
Bright's Disease	1		2	2	1		1	1	1	1	1	2	16	10	17	5	22	8	18	12	17	7	5	6	1	2		2	104	58	162
Cancerous Diseases													1	1	5	5	18	12	24	5	21	4	8	4	2		1	1	80	32	112
Suicide													4		3	2	5	2	6	1	2		3						24	5	29
Sunstroke														1	2		2												4	1	5
Total	249	127	124	105	170	177	142	169	55	80	93	120	352	323	353	218	311	179	258	121	188	67	90	42	17	15	3	8	2405	1751	4156

MORTALITY FROM SOME OF THE PRINCIPAL DISEASES IN THE CITY OF NEW ORLEANS DURING THE YEAR 1883, CLASSIFIED ACCORDING TO NATIVITY.

NATIONALITIES.	Yellow Fever.	Malarial Fevers.	Typhoid Fever.	Scarlet Fever.	Measles.	Dyptheria.	Small Pox.	Diarrhœal Diseases.	Congestion of Brain.	Phthisis Pulmonalis.	Pneumonia.	Bright's Disease.	Cancerous Diseases.	Suicides.	Sunstroke.
Austria--Hungary	....	3	2	....	....	....	....	1	....	3	....	....	1	....	1
Belgium	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....
British America	...	7	....	....	....	....	....	2	....	....	1	....	....	....	....
Central America	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....
China	....	2	....	....	....	....	....	2	....	2	1	....	....	....	....
Denmark	....	....	....	....	....	....	1	....	1	3	....	2	....	....	....
France	....	13	1	....	....	....	15	19	2	35	14	4	10	5	....
Germany	..	44	4	1	....	1	36	55	10	77	24	15	22	6	....
Great Britain (including Ireland)	....	59	3	....	....	....	6	60	10	88	27	22	18	1	....
Greece	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Holland	....	3	....	....	....	....	....	....	....	....	....	....	....	....	....
Italy	1	14	3	....	....	.	3	21	....	9	6	....	2	....	....
Louisiana	....	254	35	35	17	65	1011	359	69	443	217	68	23	9	1
Mexico	....	1	....	....	....	....	2	....	....	2	....	....	....	....	....
Norway and Sweden	....	3	....	..	....	....	....	2	....	2	2	1	....	....	....
Portugal	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....
Russia	....	3	....	....	....	....	1	....	....	....	....	1	....	....	....
South America	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Spain	....	6	....	....	....	....	2	4	2	8	4	1	2	....	....
Switzerland	....	1	....	....	....	....	1	1	....	2	1	1	2	....	....
United States (not Louisiana)	...	62	3	3	1	1	181	90	15	166	51	46	30	7	1
Turkey	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
West Indies	....	3	....	....	....	....	4	6	1	4	2	1	2	....	....
Not stated	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2
Total	1	478	51	39	19	67	1266	623	110	845	350	162	112	29	5

Observations on the Climate and Health of Louisiana.

and more especially upon the relations of the climate of New Orleans to epidemic and endemic diseases.

By climate we mean everything which relates to the physics and chemistry of the air in which we live, which not only continually flows into our blood, but also alters the conditions of our existence, and the state of bodily health, by its variations of chemical constitution, of temperature, of moisture and of electrical and chemical forces.

The conditions of heat, rapidity of motion, weight and moisture in the atmosphere, are so important in their relations to agriculture, commerce and health, that institutions have been established all over the world for measuring the frequent variations.

The discovery of oxygen by Priestley, laid the foundation for the establishment upon a firm foundation of the chemistry of the earth's atmosphere; he believed that he had found the variations to be equal in amount to 6 per cent; Scheele found from 20 to 30 per cent, and others still greater variations; but Cavendish, who made 500 analysis, showed that the differences in the composition of the air of various localities were very small, and arrived at the conclusion that 20.833 per cent of oxygen is the mean amount and that the composition is constant. Gay-Lussac and Humboldt after many experiments which gave from 20.9 to 21.2 per cent of oxygen, settled on a mean of 21.0; Gay-Lussac gave as a mean of the air from mountains and from Paris 21.49; DeSaussure examined the air at Chambeisy and found a mean of 21.05; Bertholet 21.05, Thom Thompson 21.0; Davy 21.0 Vogel on the Baltic 21.59; Hermbstadt on the Baltic 21.5; Dalton at Manchester from 20.7 to 21.15; Doyère found from 20.5 to 21.5; Regnault gave as the result of 100 analyses of the air of Paris, variations from 20.913 to 20.999, with a mean of 20.96 from Lyons from 20.918 to 20.966, from Berlin from 20.908 to 20.998, from Madrid 20.916 to 20.982, Geneva and Switzerland, 20.909 to 20.982, Toulon and Mediterranean 20.912 to 20.982, Atlantic ocean 20.918 to 20.965, Ecuador 20.960, Pichincha, higher than Mount Blanc, 20.949 to 20.981; mean of all the analyses of Regnault 20.949 to 20.988; Bunsen in his numerous analyses of the air of Heidelberg, found the maximum to be 20.970, lowest 20.040; mean 20.924. Dr. Robert Angus Smith, from a careful examination of the analyses of the preceding and other chemists, as well as from his own extended observations, regards the average composition of the atmosphere in 100 volumes to be: oxygen 20.96, nitrogen 79.00, carbonic acid 0.04.

Analyses of the air of impure places show deviations from the numbers found on analysing fresh air. Thus, according to Configliachi, the air of rice fields contains 20.08 per cent of oxygen, of crowded places 20.3; according to Regnault, air of Toulon Harbor 20.85, of Algiers 20.42 to 20.39 of Bengal Bay, over bad water, 20.387; according to Robert Angus Smith in the middle of Manchester, 20.179 to 20.868; air from closets or middens behind laboratory 20.70; London, mean of air from various places, 20.857; Glasgow 20.889, marshy or confined places, Switzerland, 20.937 to 21.01.

It is evident from the preceding facts, that the variations in the amount of oxygen in the atmosphere under various circumstances, of elevation and crowding, are not sufficient to establish any connection between them and the origin and spread of contagious diseases.

With reference to the relations of the active state of oxygen *(ozone)*, to the origin and spread and arrest of epidemics; it must be admitted that:

1. The estimation of ozone, is in an unsatisfactory state, because other substances, besides ozone, act on the iodide of potassum, especially nitrous acid, which is formed in some quantity during electrical storms; the papers cannot be put under the same conditions from day to day; supposing that iodine is set free by ozone, a portion of it is at once changed by additional ozone into iodozone, which is extremely volatile at ordinary temperatures, and hence a portion of the iodine set free never acts on the starch; and finally, because the ozone may possibly act on the starch itself.

2. The substance giving the reaction of ozone is neither deficient in marshy districts, nor when ozone is conducted through marsh dew does it destroy the organic matter; and there are are no experimental proofs that it acts on the organic impurities of respiration.

3. There is no weight of evidence to prove that deficiency in ozone has assisted the spread of epidemics of any of the specific diseases, or that excess has checked them.

The facts, however, that the reaction with Schoonbein's or Moffat's papers is greater in pure than in impure air, at the seaside than in the interior, that ozone is often absent from hospital wards, though present in the air around them, that it is greatest when the barometer, the mean daily temperature, and the dew-point are all high, should lead to farther and more numerous experiments; but they do not warrant the assertion made by some writers, that the cessation of epidemics of cholera, malarious fevers, and even yellow fever, has been due to currents of air bringing ozone with them; neither do they sustain the assertion that the accumalation of malaria at night is due to the non-production of ozone by the suns's rays, and that the effects of stagnant air in increasing epidemics is due to the absence of ozone.

The effects of the variations of positive electricity on health, and on the origin, spread and intensity of diseases, are unknown; and beyond the fact that free electricty appears to be less during the prevalence of certain epidemics, as that of 1878, in New Orleans, all else is pure speculation.

No theory of the causation of disease has yet embraced the consideration of the neutral gas, nitrogen; but carbonic acid, sulphuretted hydrogen, carburetted and phosphuretted hydrogen, and various volatile substances which constitute odors and vapors, nitrogenized organic matter, organized and living matter, have been considered as active agents in the production of disease.

The variations of carbonic acid and of sulphuretted hydrogen are, without doubt, most marked in crowded cities and in mines, and whilst both these gases are evolved from putrifying organic substances in increased amounts during the heat of summer, there are no facts to show that such increment is in any manner connected with the development and spread of such a disease as yellow fever.

The effects of these gases are best studied in mines, in which when the quantity of oxygen falls under 13 per cent and is too small for the process of respiration, or when the carbonic acid amounts to 7 per cent, with several per cent of sulphuretted hydrogen and miasms of a peculiar kind, they communicate to the atmospheric air a property which is often very dangerous. As the venous blood possesses a greater affinity for the oxygen than the carbon of combustible substances, a man can replace the loss of oxygen by frequent breathing, and therefore can live when candles and mine lamps go out. As neither the combustible material nor the venous blood can remove all the oxygen from the air, but rather diminish it to 18

and at most to 12 per cent, it follows that atmospheric air, the oxygen o which is to a certain degree diminished, acts towards men and candles like pure nitrogen. In an atmosphere poor in oxygen there is felt, not so much as a consequence of the presence of nitrogen as the absence of oxygen constriction of the chest, tickling of the eyes, fatigue, weakness and anxiety the breathing becomes more heavy and frequent, and the laborer is com pelled to make more exertion at work, whilst perspiration and thirst ensue If the laborer be continually subjected to such agencies for considerable periods of time, there will be induced, in addition to the rapid breathing paleness, anæmia, debility, hardening of the glands, herpetic eruptions, los of power in the extremities, and early asthma. We exclude, therefore, from the consideration of the causation of yellow fever, the variations of th amounts of oxygen, ozone, electricity, nitrogen, carbonic acid, carburette and phosphuretted hydrogen in the atmosphere; for such variations ar more marked and frequent in localities in which yellow fever is unknown

The organic, organized and living matters of the atmosphere, therefore demand the first consideration; and in the second place, the moisture an temperature of the atmosphere; and in the third place, the force and direc tion of the winds, and the amount and intensity of the electrical actions and in the fourth place, the variations in the chemical constitution of th atmosphere, and the effects, the variations of ozone and of the establishe and extraneous, or what may be termed adventitious and abnormal const tutuents of the atmosphere.

The thorough discussion of the preceding subjects, even if the prope data were at hand, would swell the present division into the magnitude a volume; and we must delay to some future time the consideration of th minute history of the meteorological characters and differences of epidem and non-epidemic years.

The great problem of interest is : can climatic conditions in New Orlea cause or engender, *de novo*, certain infectious diseases, as *yellow fever ?*

If they cannot, then the protection of this city or valley from yello fever lies in a *rigid quarantine*, supplemented by *thorough disinfection a sanitation.*

CLIMATE AND HEALTH OF LOUISIANA.

ASTRONOMICAL POSITION.

Between latitudes 28° 55′ and 33°, north, and longitudes 11° 38′, and 1 21′ west, from Washington; and 88° 40′, and 94° 23′, from Greenwich.

DIMENSIONS.

The extreme length of the State, east and west, is 290 miles; area, 41,2 square miles. The longest line that can be drawn in Louisiana is from t mouth of the Mississippi to the northwest angle in Sabine, 380 miles.

SURFACE.

There is not, perhaps, on earth a continuous tract of equal extent p senting a greater diversity than Louisiana. Within its limits are includ all the varieties, from the most recent and still periodically inundat alluvium, to hills approaching the magnitude of mountains; every quali of soil, from the most productive to the most sterile, and from unwood plains to dense forests.

All the southern part of this State is an alluvial tract of low champl country, extending from Lake Borgne to Sabine river, and from the G of Mexico to Baton Rouge and Red River—about 250 miles long, and fr 70 to 140 wide. This extensive tract is intersected by numerous rive

bays, creeks and lakes, dividing the country into a great number of islands. A large extent of country in Louisiana is liable to be overflowed by the Mississippi. According to Mr. Darby, the accurate and learned and accomplished surveyor, the average width of overflown lands above Red River, from latitude 31° to 33° north, may be assumed at twenty miles, equal to 2770 square miles. Below latitude 31° to the efflux of the Lafourche, about eighty miles in extent, the inundation is about forty miles in width, equal to 3200 square miles.

All the country below the efflux of the Lafourche is liable to be inundated, equal to 2370 square miles. From this calculation, it appears that 8340 square miles are liable to be inundated by the overflowing of the Mississippi; and if to this be added 2550 square miles for the inundated lands on Red River, the whole surface of the State liable to inundation will amount to 10,890 square miles. Of this extent, however, not one-half is actually covered annually with water; and every year, by the extension of levees and by the deepening of the mouths of the river, the area of cultivated land is becoming greater, and that subject to overflow less.

The immediate banks of the Mississippi River and its tributary streams are seldom, and many of them never, inundated, and they afford strips of arable land from one mile to two miles wide, of unsurpassed fertility, producing the great sugar and rice crops of Louisiana. The water of the lakes, as well as that of the Mississippi River, moderate the intense heat of summer and the severe cold of winter, and the residences of the planters on the banks of the streams are noted for their elegance, comfort, thorough ventilation and healthful climate.

From its southern latitude, it might seem reasonable to expect in Louisiana a very warm climate, and this has been reckoned upon to a greater extent than experience justifies. The winters are in fact more severe, and the mean temperature lower, than in higher latitudes, by 2° on the Atlantic. In reality, as far as vegetation can decide the question, the seasons may be considered milder at Charleston, South Carolina, latitude 32° 42′, than at New Orleans, in latitude 30°.

We will, however, consider this subject of the influence of the topographical and geographical situation of Louisiana on her climate more fully hereafter.

Col. S. H. Lockett, for many years the able and accomplished Professor of Engineering in the Louisiana State University, who traveled over all the parishes of this State in search of data for his excellent topographical map of Louisiana (various journeyings amounting to more than 4000 miles within the limits of the State), thus classifies the surface of Louisiana:

"Lands within the limits of Louisiana, including coast marshes, 40,700 square miles; inland water coast bays 2328 square miles; total, 43,028 square miles. There are two general divisions of the lands of the State, the hill and the level lands; hilly lands, 12,332,920 acres; level lands, 12,773,000 acres; total, 26,105,600. These lands may be classed as follows: Good uplands, 5,298,000 acres; pine hills, 5,497,600; bluff lands, 1,587,320; prairie region, 2,483,000; arable alluvial land, 3,615,00; wooded alluvial lands, 2,752,000; pine flats, 1,585,000; coast marsh, 3,338,000; inland water surface, 1,228,000; coast bays, 1,100,000. As it is situated at the mouth of the greatest river on the continent, and contains within its limits the delta of this river, intersected by numberless lesser rivers and bayous, and filled with lakes, most people conclude that Louisiana is, throughout its entire extent, a low, wet, swampy region. They imagine its surface to be a great plain of wonderful fertility, when at all arable, with an indefinable succession of deep jungles,

tangled swamps, marshes, lakes, sloughs, cane and cypress brakes. F these misconceptions will be speedily dissipated by a journey into the terior, and it will be discovered that few States of the Union possess greater diversity of surface, soil, climate, scenery and products than L isiana, and no State has a more varied and interesting population, o more eventful history."

EFFECTS OF THE RIVERS, LAKES, BAYS, AND OF THE GULF OF MEXICO THE CLIMATE OF LOUISIANA.

As the melting of a given quantity of ice requires as much heat as wo be needed to raise the temperature of a sixty-three times greater mass water one degree of Reaumur; and as when boiling water assumes the f of vapor, there is required in this process and the formation of vapo equal temperature, as much heat as would be required to raise the tem ature of a 430 times greater mass of water one degree of Reaumur, it evident that enormous quantities of heat must be absorbed at the bas the atmosphere in the process of the thawing of ice and the evaporatio water. When the water is reconverted from the higher to the lower f of aggregation, the heat so absorbed is again given out. And as the mation of clouds takes place principally in the higher parts of the atr phere, the latter resembles in some degree a steam engine, having its denser above. The decrease of temperature with increasing elevatio much lessened. At the same time, the clouds formed at a definite he intercept the sun's rays, and at such times the heat—which in clear we er is produced in far the largest amounts at the bottom of the atmosp —is received instead in its higher portions.

The reverberation from the ground as a second source of atmosp heat, depends on the character of the surface; and the formation of teaches us what small differences are influenced in this respect. In re to the warming of the air by contact with the earth, it is to be obse that a liquid surface is continually renewed, inasmuch as every depres of temperature causes the water at the surface, which by cooling has come denser and heavier, to sink down and make way for the warm w which rises from below to replace it; and this goes on until the densit the fluid makes it the same throughout its entire depth.

It is thus that the depths of the sea are deprived of the tempera which they would have if they were as far beneath a liquid surfac cause the process of evaporation, or the conversion of parts of the v into vapors, employs heat, which if the surface were land would be directly by contact to the adjacent air.

The large masses of water in Louisiana, therefore, moderate the he summer and the cold of winter, and thus give to this State the advan of an insular climate.

The climate of Louisiana resembles in many respects that of the M sippi valley.

George Preston, in 1794, was the first who decidedly controverte assumption that America was everywhere much colder than Europe the same latitude. "It seems to us," he said, "as if there was som aggeration in this sweeping assertion. The interior of North Americ yond the Alleghanys, enjoys a far milder climate than the east coast same latitude. The wild rice, which will not ripen on the south sho Lake Superior, grows abundantly and brings its seed to maturity Lake Winnepeg, nearly five degrees further to the North. Hearn Mackenzie in their journeys to the interior, found the country clothe forest to latitude 68°, and forests do not extend further North than t Europe."

TABLE E.

Mortuary Records of New Orleans, by the Month and by the Year, for Four Years—1853, 1858, 1867, 1878—in which Yellow Fever Prevailed with the Greatest Severity in the Annals of this City. Consolidated from Original Reports and Records, Collected by Joseph Jones, M. D., New Orleans, Louisiana, United States of America, No. 156 Washington Street, corner Camp Street, Fourth District, January 1, 1882.

	Total for each year 1853	1858	1867	1878	Total for 4 years 1853 1858 1867 1878
GENERAL DISEASES.					
Small-pox and Varioloid	17	108	47	151	323
Measles	123	7	2	3	135
Scarlatina	136	79	24	1	240
Typhus Fever	103	20	20	23	169
Cerebro Spinal Fever			52	24	76
Enteric or Typhoid Fever	146	189	119	44	498
Simple Continued Fever			22	14	36
Yellow Fever	7,849	4,855	3,107	4,046	19,857
Gastric Fever			1		1
Malarial Fevers: Intermittent Fever	38	22	51	30	141
Malarial Fevers: Remittent Fever	22	30	110	122	287
Malarial Fevers: Congestive Fever	263	369	545	355	1,532
Malarial Fevers: Typho Malarial Fever				23	23
Malarial Fevers: Malarial Fever (unclassified)	90	69	45	241	445
Cholera, Malignant or Asiatic	585	26	581		1,192
Cholera Morbus	35	14	46	16	111
Cholera Infantum	73	108	100	79	362
Diphtheria		95	31	59	185
Whooping Cough	44	28	28		100
Erysipelas	18	15	9	11	53
Pyaemia			6	19	25
Puerperal Fever	15	7	11	13	46
Rheumatism	12	15	16	16	59
Syphilis	6	16	12	15	49
Cancer	24	58	63	115	260
Scrofula	17	17	10	5	49
Tubercular Meningitis				10	10
Phthisis Pulmonalis	755	779	671	880	3,085
Tabes Mesenterica	121	201	161	166	649
Diabetes		1	1	2	4
Rickets			1	2	3
Anaemia		12	26	29	67
General Dropsy	84	101	42	46	273
Gout		4	4	1	9
Influenza		1			1
Scurvy		3	3		6
All other General Diseases not enumerated		11	4	7	22
LOCAL DISEASES.					
Diseases of the Nervous System.					
Congestion of the Brain	111	156	160	155	582
Inflammation of the Brain (Encephalitis)	134	17	43	18	212
Meningitis	61	100	57	73	291
Apoplexy	133	114	91	112	450
Sun-Stroke	21	20	6	2	49
Hydrocephalus	24	40		14	78
Diseases of the Cerebral Arteries				10	10
Spinal Meningitis				35	35
Myelitis				3	3
Hemiplegia				11	11
Paraplegia			1	6	7
Paralysis (unclassified)	15	24	37	32	108
Locomotor Ataxia				2	2
Tetanus: Unclassified	49	53	128	4	234
Tetanus: Idiopathic				2	2
Tetanus: Traumatic				48	48
Trismus Nascentium	144	222	246	177	789
Hydrophobia	6		2	6	14
Convulsions	465	7	68	88	628
Convulsions Infantile		521	270	175	966
Epilepsy	13	20	19	14	60
Hysteria		1	2		3
Delirium Tremens and Intemperance	123	129	37	33	322
Insanity		3		7	10
Paralysis of the Insane				1	1
All other Diseases of this System	18	30	49	36	133
Diseases of the Circulatory System.					
Pericarditis	19	8	5	10	42
Dropsy of the Pericardium			3	3	6
Endo-Carditis				14	14
Heart Disease (valvular)	9	2	3	51	65
Heart Disease (Unclassified)	41	87	110	148	386
Heart, Enlargement of		13	8	20	41
Degeneration of Arteries			4		4
Aneurism			1	1	2
Aneurism of the Aorta		5	3	2	10
Embolism of Heart				2	2
Phlebitis		2		1	3
All other Diseases of this System	41		8	6	55
Diseases of the Respiratory System.					
Croup	35	126	46	37	244
Laryngitis	6		1	18	25
Oedema of Glottis				3	3
Bronchitis	94	106	103	191	494
Asthma	7	11	20	27	65
Pneumonia	184	276	317	343	1,120
Abscess of Lungs		3	1	3	7
Gangrene of Lungs		7	6	4	17
Emphysema of Lungs				5	5
Haemoptisis				22	22
Pleurisy	10	9	13	18	50
Empyema		1		6	7
Haemorrhage of Lungs		17	18		35
All other Diseases of this System	42	5	24	5	76
Diseases of the Digestive System.					
Haematemesis				5	5
Stomatitis				7	7
Teething	143	189	107	86	525
Ulcerative Sore Throat		13	4		17
Thrush			1		1
Tonsilitis		1			1
Gastritis	37	48	21	31	137
Enteritis	210	228	254	187	899
Dysentery	270	229	180	120	799
Ulceration of the Bowels		20	5	4	29
Haemorrhage of the Bowels			6	6	12
Intussusception of the Bowels		2	1	10	13
Obstruction of the Bowels		1			1
Diarrhoea	267	297	205	170	939
Hernia (Class Stated)		3	2	4	9
Hepatitis	38	65	40	65	208
Abscess of the Liver		15	10	15	40
Cirrhosis of the Liver	6	9	10	38	63
Atrophy of the Liver			5		5
Degeneration of the Liver		6	2	1	9
Jaundice	4	21	6	6	37
Splenitis		1			1
Peritonitis	24	35	25	26	110
Ascites	20			9	29
All other Diseases of this System	45	27	62	17	141
Diseases of the Urinary and Generative System.					
Bright's Disease			18	107	125
Albuminuria		11			11
Suppression of Urine					
Cystitis			4	14	18
All other Diseases of this System	4	26	34	19	83
Affections Connected with Parturition.					
Haemorrhage		11	10	18	39
Puerperal Mania					
Puerperal Convulsions		8	3	17	28
Puerperal Septicaemia					
All others	35	18	6	11	70
Diseases of the Organs of Locomotion		9	1	5	15
Diseases of the Cellular and Cutaneous System	27	27	19	14	87
Conditions not Necessarily Associated with General or Local Diseases.					
Premature Birth		50	52	97	199
Old Age	53	77	60	105	295
Debility	226	39	91	204	560
Debility Infantile	13	75	45	150	253
Poisoning	4	7	6	1	18
General Injuries.					
Drowning	105	86	80	59	330
Burns and Scalds	15	37	36	36	127
Inanition			9		9
Starvation				9	9
All other General Injuries	77	60	10	43	190
Local Injuries.					
Wounds	47	47	14	16	124
All other local injuries		30	17	36	83
Human Parasites	19	6	5		30
Tumors, Non-Malignant	9	7	9	7	32
Congenital Malformations		5	7	13	25
Suicide	14	21	16	16	67
Killed or Murdered		6	55	10	71
Unknown, or Not Stated	1,233	129	111	39	1,512
Total Deaths	15,633	11,372	9,586	10,318	46,909
Still-born	346	338	510	399	1,593

In attempting to obtain any general results respecting the distribution of heat in the United States of North America, three regions should be distinguished: First, the regions of the Atlantic States, east of the Alleghanys; second, the Western States, in the wide basin between the Alleghanys and Rocky Mountains, watered by the Mississippi, the Ohio, the Arkansas and the Missouri; and third, the elevated plains between the Rocky Mountains and the coast range of New California, through which the Columbia, or Oregon river winds its course. Since the establishment by John C. Calhoun of uninterrupted observations of temperature made on a uniform plan, at the various military stations extending from the point of Florida and Thompson's Island (Key West), to the northern boundary of the United States, and embracing over forty degrees of latitude, we have obtained more correct climatic views than were generally held in the time of Jefferson, Barlow and Volney.

The great characteristic feature of North America is its vast interior valley, extending from the Gulf of Mexico to the Arctic Ocean, and presenting every variety of climate between the tropical and polar regions. This valley is cut off from the general influences of the Pacific Ocean on the West, by the Rocky Mountains, and from those of the Atlantic Ocean in the East, but in a less degree by the Alleghanys. It is traversed by a deep winding longitudinal depression forming the trough of the Mississippi for more than two thousand miles.

The hypsometrical character, or relation to the sea's level of the richly watered, fruitful and thickly inhabited basin of the Mississippi, was first explained by the labors of the French astronomer Nicollet.

The plain which encloses the valley of the Mississippi is identical with that of northern Canada, and forms part of one of the same depressed basins extending from the Gulf of Mexico to the Aretic Sea. Wherever the low land falls into undulations, and slight elevations, which still retain the French appellations of *coteaux des prairies*, *coteaux des bois*, in connected rows between the parallels of 47° and 48° north latitude, these rows and gentle undulations of ground separate the waters between Hudson's Bay and the Gulf of Mexico. Such a line of separation between the waters is formed, north of Lake Superior; Kichi Gummi, by the Missabay Heights, and further west by the elevations known as *Hauteurs des Terres*, in which are situated the true sources of the Mississippi, one of the largest rivers in n the world, and which were not discovered till the year 1832.

The highest of these chains of hills hardly attains an elevation of from 1500 to 1600 feet. From its month (the old French Balize) to St. Louis somewhat to the south of its confluence with the Missouri, the Mississippi has a fall of only 380 feet, notwithstanding that the itinerary distance between these two points exceeds 1280 miles. The surface of Lake Superior lies at an elevation of 618 feet, and as its depth in the neighborhood of the island of Magdalena is fully 790 feet, its bottom must be 171 feet below the surface of the ocean.

The broad valley of the Mississippi enjoys at its northern extremity, the warming influence of the Canadian lakes, and at the southwest of the Mexican Gulf stream.

These five lakes, (Lakes Superior, Michigan, Huron, Erie and Ontario), cover an area of 92,000 square miles. The climate is so much milder and more uniform in the vicinity of these lakes than at Niagara, for instance, (in 43° 15′ north lat.), the mean annual winter temperature is only half a degree below the freezing point, while at a distance from the lakes in 44°, 53′ north latitude at Fort Snelling, and near the confluence of the river St. Paul with the Mississippi, the mean winter temperature is 15.8°, Fahrenheit.

At this distance from the Canadian lakes, whose surface is from five to upwards of six hundred feet above the sea's level, whilst the bottoms o Lakes Michigan and Huron is five hundred feet below it. Recent observations have shown that the climate of that country possesses the actua continental character of colder summers and colder winters.

The waters which enter the Gulf of Mexico between Cape Catoche, o Yucatan, and Cape San Antonio de Cuba, force their way back into th open ocean north of the Straits of Bahama, after they have been agitate by a great rotatory movement between Vera Cruz, Tamiagua, the mout of the Rio Bravo del Norte, and the Mississippi. Here they form a warm rapid current, known to mariners as the gulf stream, which deflects in diagonal direction further and further from the shores of North Americ The high temperature of the gulf stream, in all parts of its course, is on of its striking peculiarities. It is a current of warm water, so greatl above the average heat of the ocean, that the navigators may at onc detect his entrance into it by the sudden rise of the thermometer.

The difference often amounts to 9, 12 and 15 degrees Fahrenheit, an sometimes to much more. Near Cape Hatteras, on the coast of Nort Carolina the thermometer shows 81 degrees in summer, which is from 1 to 11½ degrees above the water of the ocean, in the same latitude imm diately contiguous to these streams.

At Cuero, one of the Azores, its temperature is from 75½ to 77½ degree which is from 8 to 10 degrees above that of New Orleans. It is on t Mexican Gulf, which may be properly called a cauldron for heating wate that this high temperature is acquired, which is then in summer 4 degre above that of the open ocean under the equator.

From these physical conditions, the following influences are exerted forming the peculiar character of the climate of Louisiana, which for the southern extremity of the Mississippi Valley on the Gulf of Mexico:

1. The atmosphere of Louisiana is loaded with moisture, and upon t condition, as well as its warm temperature and the abundant uniform d tribution of rains in spring and summer, mainly depend its luxuria forests and splendid crops of sugar-cane and cotton.

Whilst the rains which water the Atlantic slope are equally distribute and those of the California coast are *periodic*, making a well-defined w and dry season, those which water the Mississippi Valley are *unequally d tributed*; those of spring and summer being greatly in excess. In wint the mouths of the Mississippi and the region of Pensacola are in the ar of greatest precipitation (18 inches) From this centre, the lines of equ precipitation on the west maintain a considerable parallelism; first, n northwest, along the Texas coast; then rapidly curving near northea then east; and, as they leave the continent, northeast. In autumn, t mouths of the Mississippi and the region of Pensacola are still within t area of greater precipitation. The lines of equal precipitation pursu north-northeast direction.

In summer, the average rainfall at New Orleans is about 17.28 inches; autumn, 9.62 inches; spring, 11.29; winter, 12.71.

The abundant supplies of rain, and their relations to the seasons a agriculture, will be most thoroughly and practically illustrated by the lowing tables and facts, in which we have connected the monthly a annual rainfall expressed in inches and fractions of an inch in New leans during a series of years, with the total mortality from yellow fever

MONTHLY AND ANNUAL RAIN-FALL, WITH DEATHS FROM YELLOW FEVER, IN NEW ORLEANS, LA., FOR A SERIES OF YEARS. CONSOLIDATED BY JOSEPH JONES, M. D.

(Expressed in inches and fractions of an inch.)

YEARS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total inches.	Deaths by Yellow fever
Mean of 6 years 1833 to 1838	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	57.85	
Mean of 3 years 1836 to 1838	4.66	2.25	2.59	6.21	2.95	6.10	6.38	5.72	5.60	1.37	3.18	2.87	49.88	
1839	8 10	3.40	2.19	2.10	2.02	3.11	9.86	4.80	.12	2.40	3.92	4.40	46.42	809
1840	.11	2.01	1.09	3 10	4.80	7.10	5 60	3 10	1.80	7.80	5.55	2.22	44.28	3
1841	19.50	5.10	6.90	5.10	1.70	3.10	.89	3.41	2 87	2.41	.11	9.44	60.53	1325
1842	4 21	3.51	2.71	5.20	1.12	1.13	4.52	7.40	4.80	1.50	3.25	1.70	41.05	211
1843	4 00	3.80	5.51	2.67	.45	14.57	6.33	5.11	5 51	3 49	1.93	6.02	59.19	187
1844	4.41	.73	3.90	.53	3.16	2.75	8.80	5.21	1.08	2 18	7.78	1.35	38.97	148
1845	6.24	1.19	5.16	1.99	8.06	3.20	1.88	4 53	4.30	6.26	4.62	6.20	53 58	2
1846	9.20	6.66	7.88	10 70	9 37	7.98	8.86	6.90	6.32	1.14	1.56	1 55	78 12	160
1847	7 71	3.77	3.40	4 63	4.80	3.43	5.06	6.81	2 83	75	2.59	7.73	53.51	2306
1848	5.42	1.28	1.97	3.92	4.75	9.36	7.79	8.37	.80	2 31	8.83	1.86	56.66	808
1849	3.55	2.45	2 83	2.43	8.01	3.79	11.09	4.85	4 01	6.88	4 48	2.52	56.89	760
1850	7.40	4.53	2.27	4.10	6.20	8.92	6 31	10.05	1.85	.96	1.58	3.46	58 53	107
1851	3.82	3.18	1 20	3 49	2.93	2.21	2.13	10.46	3.85	3.70	9 00	2.69	48.66	17
1852	.80	1.45	4.24	5.25	7.23	1.64	7.44	1 75	1.16	2 83	7.00	5.30	86.09	456
1853	3.20	4.20	7.38	1.88	2.80	1.86	11.71	7.01	5 04	5 17	7.03	4.57	61.85	7849
1854	1 89	9.84	4.18	3.81	6.15	4.08	2 94	3.48	1 92	4.84	1.55	1.16	52 75	2425
1855	.86	2.06	.82	2 00	1.77	1.75	7.24	4.12	4 36	2.10	5.59	8.23	41.70	3670
1856	8.90	3.68	3.73	2 85	2.53	5.79	8.63	16.12	3.20	2.29	4.65	4.75	67.12	74
1857	2 68	1 97	2.86	1.73	7.33	2 90	5.86	4.64	2.55	5.01	3.05	5.10	45.68	199
1858	3.71	4.30	4.71	2.26	3.45	4.89	7.72	7.35	3 67	4 13	3.20	3.42	52.81	4845
1859	6.40	3.77	7.84	3.99	1.94	7.12	.93	6.17	1.19	2.17	2.79	5.09	49 40	91
1860	.64	8.61	.76	2.42	1.26	5.07	1.50	4.50	1.80	5.66	4.28	2.74	39.24	15
1861	.....	.....	.....	7.58	.01	4.41	3.62	8.71	6 14	3.95	25	.76	35 43	.....
1862	3 79	2.76	2.83	4.10	.65	.58	4.54	2.15	4 68	1.03	.36	1.59	29.06	2
1863	2.11	3.56	3 73	.31	3.02	2 62	3.30	4.44	.174	1.67	.26	4.12	30.88	2
1864	3.42	.30	3.05	.98	.68	2.86	1.91	7.98	2.15	2.22	.77	.46	26.78	6
1865	3.97	3.94	5.30	.24	....		.....	.....	.....	.....	.....	.....	.....	1
1869	.....	.....	13.90	4.47	1.10	9.88	4.64	8.73	8.19	5.09	5.21	3 13	64.34	3
1870	9 46	3.61	2.85	9.22	4.41	4.09	6.08	11.58	1.64	1.85	5.15	9.52	69.46	587
1871	13.52	1.29	6.11	2.75	5.72	9.96	6.43	8.63	6.88	15.65	9.04	2.14	88.12	54
1872	5.22	5·91	9.73	6.73	3.97	5.78	7.03	3.95	2.36	3.38	9.06	5.69	68.81	39
1873	5.61	2.20	5.49	1.73	21 50	8.58	6.75	10.82	4.46	1 80	7.35	1.87	78 17	226
1874	2.30	3.70	7.31	18.44	.04	11 97	17.37	5.92	5.08	..	1.76	3.57	77.46	11
1875	9.17	16.22	13.73	10.44	3.19	6 22	8.19	11.32	8.54	2.26	6 86	5 72	101.86	61
1876	5.47	9.33	11.65	8.20	8.54	7.19	5.19	5.55	0.39	10	2.97	8.29	72 87	42
1877	8.20	.85	5.31	4 51	1.14	2.30	7.07	3.27	16.29	9.62	6.20	5.95	70.71	1
1878	5.36	3.50	4.63	1.51	6.14	7.12	5.26	4.90	2.67	5.07	7.78	8.59	62 53	4046
1879	2.34	2.13	1.36	9.56	4.63	2.96	7.03	10 44	2.67	1.36	4.29	2.88	51.67	19
1880	1.02	4.62	6.66	6.88	6.58	6.43	11.22	4 60	7.48	1 88	6.04	6.45	69 86	2
1881	11.16	5.80	2.75	3.92	3.20	2.84	6.97	4.21	4.47	4.84	7.24	6.62	64.02	.....
1882	4.54	4.04	0.92	4.83	6.83	2.71	3.69	9 47	1.59	2 16	1.98	4.27	47.03	4
1883	10.63	1.56	5.01	14.21	5.41	12.05	3.31	4.12	0.25	3.43	6.27	3.47	69.72	1
Av'ge of 42 y'rs, 1839 to 1883	5 49	3.91	4.84	4.68	4.35	5.26	6.19	6.53	3.90	3.58	4.46	4.31	56.86	.....

A careful examination of the preceding table establishes no absolute relationship between the amount of the rain-fall and the prevalence and fatality of yellow fever. Thus yellow fever has been absent in some comparatively dry years and has been present in others; and this disease has prevailed in some wet years and been absent in others.

The rain-fall has been greater during the past two years 1880 and 1881, when yellow fever has been absent, than during 1841, when 1325 deaths were occasioned by yellow fever; 1847, 2306; 1848, 808; 1849, 760; 1853, 7849; 1854, 2425; 1855, 2670; 1858, 4845; 1878, 4046 deaths from yellow fever. On the other hand, the rain-fall and deaths from yellow fever, during the years yielding the highest rain-fall were as follows: 1846, rain-fall 78.12, deaths from yellow fever, 160; 1856, rain-fall 67.12, deaths from yellow fever 74; 1870, rain-fall 69.46, deaths from yellow fever 587; 1871, rain-fall 88.12, deaths from yellow fever 54; 1872, rain-fall 68.81, deaths from yellow fever 39; 1873, rain-fall 78.17, deaths from yellow fever 226; 1874, rain-fall 77.46,

deaths from yellow fever 11; 1875, rain-fall 101.86, with deaths from yellow fever 61; 1876, rain-fall 72.87, deaths from yellow fever 42; 1877, rain-fall 70.71 inches, deaths from yellow fever 1.

From the preceding table we gather as a general result that whilst during the past fifty years there has been a gradual increase in the rain-fall, there has also been a marked decrease in the number and fatality of epidemics of yellow fever.

The annual rain-fall in New Orleans, during the period embraced in the table, embracing a period of forty years, may, in round numbers, be regarded as ranging from 26.78 to 101.86; average 56.79 inches.

The general mean of the months may be stated thus: January 5.39; February 3.97; March 4 93; April 4.44; May 4.26; June 5.16; July 6.32; August 6.52; September 4.05; October 3.62; November 4.48; December 4.33 inches. If an average of a series of years be selected, it will be found that the heaviest rain-fall occurs in the summer and the least in the autumn. Thus if we select the statistics of the U. S. Barracks, for a period of fifteen years, 1839-1853 inclusive, the rain-fall in inches were as follows: Spring, 11.29; summer, 17.28; autumn, 9.62; winter, 12.71; year, 50.99. The extreme quantities of rain in New Orleans, of a period of 17 years, according to the U. S. Military Register, and the observations of Dr. Barton, were: January, max. 10.5, min. 0,11; February, max. 9.84; min. 0.73; March, max. 7.88, min. 0.90; April, max. 10.70; min. 0.53; May, max. 8.06; min. 0.45; June, max. 14.07, min. 1.31; July, max. 14.74, min. 0.89; August, max. 8.39, min. 1.37; September, max. 8.92, min. 0.63; October, max. 6.45, min. 0.75; November, max. 8.83, min. 0.11; December, max. 9.44, min. 0.80; maximum for year, 62.64 (1853); minimum, 39.96 inches (1852).

The rain-fall of 1841, when yellow fever destroyed a large number of citizens, was large, 60.53; it was also much above the average amount in 1847 and 1848, but it reached 67.12 inches in 1856, when yellow fever did not prevail as an epidemic. It is worthy of note that during the entire period embraced in the table, there is not a single month in any year without more or less rain-fall.

At Fort Pike, Louisiana, latitude 31.10 N.; longitude 89.88; altitude 10 feet; meteorological observations conducted during four years, 1843-1846 inclusive, gave the rain-fall as follows in inches: January, 5.62; February 2.41; March, 7.13; April, 4.98; May. 4.59; June, 10.49; July, 8.46; August 4.66; September, 8.43; October, 3.72; November, 6.81; December 4.62; spring, 16.70; summer, 23.61; autumn, 18.96; winter, 12.65; year 71.9 inches.

Observations at Baton Rouge, north latitude 30° 26′, longitude 91° 18 altitude 41 feet, conducted during twelve years (1843-1854 inclusive), gave th following average rainfall in inches: January, 5.26; February, 4.91; March 4.68; April, 5.22; May, 5.18; June, 5.52; July, 7.42; August, 6.20; September, 3.91; October, 2.67; November, 5.90; December, 5.23; spring, 15.08 summer, 19.14; autumn, 12.48; winter, 15.40; year, 62.10 inches.

Similar observations at Port Jesup, Louisiana, north latitude 31° 33 longitude 93° 31′ altitude 80 feet, continued during ten years (1836-1845) gave the following mean results: January, 4.70; February, 2.76; March 5.02; April, 4.86; May, 3.80; June, 4.61; July, 3.36; August, 2.97; September, 3.02; October, 3.80; November, 2.92; December, 4.03; spring, 13.68 summer, 10.94; autumn, 9.74; winter, 11.49; year, 45 85.

The preceding observations upon the monthly and annual rainfall in different portions of Louisiana, establish the important fact that the rain are so distributed as to prevent disastrous drouths, and also to promot in the best possible manner the cultivation of the soil, and the rearing

watering and support of vast herds of cattle. In fact, the entomology of several of the regions of Louisiana indicate its adaptation to the raising of large herds of cattle. Thus, the word Ouachita is composed of two Choctaw words, namely, ouac, a buffalo, a cow, horned cattle in general; and chito, large (pronounced tchito, bearing lightly on the initial *t*). It means the country of large buffaloes, numerous herds of these animals having formerly covered the prairies of Ouachita. All the names, now translated into French, of Riviere aux Bœufs, Bayou Bœuf, have the same origin, from the numerous herds of buffalo which previous to the introduction of the civilized races of Europe, formed the principal support of the Indian tribes.

2. The climate of Louisiana is rendered moist and suited to the culture of the sugar cane, by the winds from the Gulf of Mexico.

Owing to several causes, as the one just mentioned, the absence of protracted drouths, the abundant rain-fall, and the presence of large bodies of water in the city and lakes surrounding New Orleans, the climate, as well as that of the gulf coast, comprising a large area in the Southern States, is very humid, containing a large quantity of vapor, though not in the sensible form of clouds or fogs. This condition of the atmosphere, combined with the tropical heat of summer, favors the rapid development of animal and vegetable organisms.

Dr. Barton has accurately observed the humidity at New Orleans for many years, and the following results for 1853, when yellow fever prevailed in its most destructive form, will show nearly the general average then :

Months.	New Orleans.	New Orleans.	St. Louis.	Greenwich.
	Humidity.	Weight Vapor per cubic foot, grains.	Humidity.	Humidity.
January	88	3.85	68	85
February	84	4.58	67	85
March	83	5.38	61	80
April	83	6.80	46	80
May	84	7.60	66	75
June	81	9.14	69	73
July	82	8 80	70	
August	87	9.74	78	77
September	85	8.57	80	74
October	80	6.05	63	83
November	84	6.06		86
December	82	4.01	68	84
Year	86	6.72	67	80

This shows a high measure of humidity for the whole year at New Orleans, and an excess of vapor in the air in the warm months.

That portion of the continent which embraces the United States, is situated in the zone of southwest winds, and these winds are found to prevail with regularity on the Atlantic, north of the calms of Cancer; but in the region of the Caribbean Sea and the Gulf of Mexico, there are abnormal conditions which present a marked deviation from the fixedness and uniformity observable in the winds of the mid-Atlantic and the north of Africa. Both southerly and northerly winds blow with violence across the parallel 30° (in the belt of the calms of Cancer), which, away from the American continent, acts as a great wall between the southwest and northwest winds.

In the summer season, the northeast trades, hot and moist from the equatorial zone, as they enter the Caribbean Sea, are deflected by the lofty chains of the Andes which girts the coast, and pass into the Gulf of Mexico, where they become inland breezes on the coast of Texas; and as they penetrate the interior, they are gradually deflected east, until they reach about latitude 39°, where they assume the direction of the great southwest aerial current. It is this deviation from the regular flow which gives to the Mississippi Valley its moist tropical summer climate.

Volney was the first to point out this deflection :

"Mariners relate that from Cape Vela, a projecting point of the Gulf of Maracaibo, the winds vary, and swerve into a course parallel to the stream which flows into the Caribbean Sea, and entering the Bay of Honduras it varies a little and blows from the southeast. The bank of sand called Yucatan is interposed between the two bays, but is so low and level that it is no obstacle to its progress. Bernard de Orto, who has published some careful information on the winds of Vera Cruz, tells us that southeast winds prevail in these parts."

He further adds that the trade-winds are deflected by the table-lands of Mexico, and become the south winds of the Mississippi Valley. Redfield admits that it is to this current that the Mississippi Valley owes its fertility and Russell, in his work on "North America: Its Agriculture and Climate," also sustains the same views, and calls attention to the remarkable generalizations of Volney, made at a time when no wind or rain charts were available.

Blodget remarks that the southeast winds prevail almost exclusive from April to October, or during the whole period of warm months, when the Western plains receive their excess of moisture. Humphreys and Abbot in their "Physics and Hydraulics of the Mississippi River," remark the great resemblance between the winds of Key West and those near the mouths of the Mississippi. "Both have, in part, the characteristics of the northeast trade-winds. Blowing chiefly between the northeast and southeast, they veer towards the south as summer approaches, and continue to blow from that quarter and from the east during the summer and early part of the autumn; changing towards the north upon the approach of winter, they blow principally from that direction during the winter months. This course conforms, too, to the track usually pursued by the great hurricanes which, originating in the West Indies, first blow southeast, then cease abruptly, and sweep the Atlantic coast in a northeast direction.

3. The presence of large masses of water within and around Louisiana as well as the mass of cold water introduced from the northern regions from the Rocky Mountains, into the heart of the continent by the Mississippi River, render the climate of this State less liable to extremes of heat than positions far north and in the interior portion of the Mississippi Valley.

Thus New Orleans, in the summer and fall months, is less liable to great and sudden elevation of temperature than Nashville, Tenn., or St. Louis,

CLIMATE OF NEW ORLEANS—ITS RELATIONS TO MALARIAL AND YELLOW FEVERS—MONTHLY AND ANNUAL ELEVATIONS AND DEPRESSIONS, MEAN OF TEMPERTURES—SUMMARY OF METEOROLOGICAL OBSERVATIONS.

I have consolidated the following tables from the most reliable sources, and they constitute valuable records for present and future study of the epidemics in New Orleans and the Mississippi Valley :

MONTHLY MEAN TEMPERATURES—MEAN TEMPERATURES: SPRING, SUMMER, AUTUMN AND WINTER—MEAN ANNUAL TEMPERATURE IN NEW ORLEANS, LA., LATITUDE 29° 57′, LONGITUDE 90° 50′, ALTITUDE 10 FEET. CONSOLIDATED BY JOSEPH JONES, M. D.

	Year.	January.	February.	March	April.	May.	June.	July.	August.	September.	October.	November.	December.	Spring.	Summer.	Autumn.	Winter.	Year.
	1820	....	....	.....	73.00	79.00	86.00	82.00	85.00	81.00	65.00	57.00	60.00	.....	84.33	67.66	.....	.....
	1822	62.90	51.60	64.10	70.80	72.20	84.30	81.50	82.80	79.50	71.40	67 30	57.70	68 86	82.86	72.73	54.06	70.10
	1825	53.26	53.33	67.80	66.90	81.82	88.54	82 95	84.33	80.17	65.70	62.60	44 00	72.17	85.27	69.49	50.21	68.90
	1826	53 20	63.27	70.71	72.54	77.61	83.24	84.16	85.15	86.64	72.97	65.55	58.28	78.62	84.18	73.05	58.25	72.27
	1827	56 74	66 85	64.31	73.03	74 00	82.65	84.50	82·40	80.60	67.57	62.04	62.00	70.11	83.15	71.91	61.86	72 30
	1828	64.58	66.01	65.34	.....	.....	.....	.....	.....	.....	....	....	.....	. .	.....	....	.....	..
	1832	....	....	.....	60.50	74.25	78.64	82.75	82.52	77.65	....	....	....	....	81.30	.....	.....	.. .
	1833	55 37	60.35	60.71	....	....	....	.....	.....	.....	.....	....	....	.	.....	.....	.....	.....
	1834	....	....	.....	.....	.....	.....	.....	.....	.....	70.74	68.08	59.10	.....	.....	....	....	...
	1835	51.60	49.60	60.40	68.00	79.50	81.80	81.10	83.00	76.60	69 90	63.70	63 90	69.30	81.63	66.73	51.70	68.30
	1838	56.61	52 38	64 10	67.19	68.65	82.07	82.47	82.11	77 85	68.39	57.07	52.85	66.65	82.22	87.60	58.95	67.61
	1839	56.22	54.48	60.99	70.98	77.33	83.03	82.48	82.25	79.22	75.35	57.40	48 09	69.76	82.59	70 67	52.93	68.99
	1840	55.09	61.77	99.15	70.38	77.30	79.97	85.56	84.96	68.91	74 33	65.66	56.13	73.61	83.50	72.96	57.66	71.96
	1841	55.46	55 61	64.81	71 62	76.17	84.35	87.02	83.86	78.58	69.17	61.83	55.40	70.87	85.08	70 16	55.49	70.40
	1842	56.96	58 50	71 35	69.80	74.96	80.56	80.25	79 58	78 63	69 03	59 06	53 29	72.03	80.13	68.91	55.25	69.33
	1843	55.43	54.16	62.03	70.85	75.79	78.50	81.40	80 20	80.60	68 20	68 18	55 77	62.22	80 08	69 03	56.12	67.61
	1844	58.54	59.28	68.55	72 62	78.46	79.80	84 30	82.00	79.10	68 20	65 02	57.18	71.51	81.51	70.75	58.33	70.52
	1845	57.25	59.91	92 11	72.75	73.20	79.46	....	.....	.. ..	....	....	.....	69.85	3	.....	.....	.....
	1846	...	.....	61 50	67.19	75.28	80.14	82.73	.	.	68.82	63 94	62.14	67.98	.	.	.....	....
	1847	55.85	57.30	61.90	72.48	76.56	78.75	81.82	82.68	77.85	71.16	69.37	58.25	69.98	81.08	71.13	55.13	69.33
	1848	58.18	61.68	64.38	68.39	76.47	82.86	80.42	81.25	79.51	73.67	59.58	59.43	69.73	81.51	79.92	59.76	70.48
	1849	60.89	56.08	70.17	71.00	76.82	81.08	81.10	85.10	81.00	69.80	66.00	61.90	72.63	82.42	72.23	59.62	71.70
	1850	59.31	55.32	63.89	68.13	72.26	76.12	82.54	86.10	83.40	66.41	60.58	55.49	68.09	81.58	70.13	56 71	79.10
	1851	54.43	59.79	61 64	68.24	75.80	83.10	85.20	84.00	80.50	69.67	60 89	55.91	68.23	84.10	70.35	56.48	71.50
	1852	46 59	62.10	63.96	67.27	78.10	80.80	84.00	83.20	80.90	74.25	61.37	61.98	67.77	82.66	72.17	56.89	70.40
	1853	50.65	56 51	62.70	70 42	74.33	80.23	82.60	84.30	80.10	65.80	66.90	51.10	69.15	82.37	70.93	52.78	67.79
	1854	53 40	56 50	66.20	64.60	75.10	80.60	80.10	81.50	78.10	69.90	57.10	52.20	58.63	80.73	68.36	54.03	68.00
	1855	54.80	51.85	59.80	70.33	79.16	81.88	82.78	84 80	82.14	67.10	66.68	56.66	69.76	82.38	71.97	54.43	67.90
	1856	55.27	58.35	64.15	70.06	75.62	81.11	82.79	82.87	78 94	71.75	62.44	55.98	69.94	82.26	70.71	56.53	69.86
	1857	50.58	64.98	62.35	64.96	74 16	80.09	81.80	81.80	80.15	69.77	61.10	58.13	67.15	81.23	70.34	57.89	69.15
	1858	59.96	56 23	64.41	71.50	77.05	81.07	83.57	83.93	79.96	74.96	54.73	61.47	70.99	82.86	69.88	59.22	70.73
	1859	53.91	63.40	66.48	70.43	79.10	82.11	83.35	82.50	80.43	70.74	65.67	53.65	72.01	82.97	72.28	57.02	71.07
	1860	56.99	59.51	64.97	76.04	80.03	86.46	88.66	85.37	82.99	72.13	61.55	55.31	73.68	86.83	72.22	53.97	72.50
	1873	49.88	60.12	61.37	67 95	75.19	81 66	83.57	82.28	79.56	68.21	61.46	56.92	68.17	82.50	69.74	55.64	69.14
	1874	56.71	59.59	67.81	66 22	76.91	82.62	86.33	85.02	80.41	70.94	64.10	59.48	70.37	83.32	71.65	58.58	70.99
	1875	53.89	55.23	64.10	65 82	77.42	80.89	83.09	80.14	77.21	68.15	66.44	62.62	69.11	81.34	70.60	57.24	69.57
	1877	53.08	55.93	60.64	67.56	73.53	78.13	81.71	83.29	78.44	70.49	68.41	56.77	67.24	81.04	69.11	56.26	68.16
	1878	51.08	55.50	66.36	71.41	75.54	81.95	83.83	83.59	78.75	71.42	59.46	50.85	71.10	83.12	69.87	52.49	69.14
Mean of 38 Years.	1820 to 1878	56	28	63.03	64.27	69.41	75.00	81.35	83.21	83.14	79.64	70.27	62.30	56.43	69.56	82.53	70.75	56.91	69.51
	1876	61.15	60.00	60.42	69.66	72.20	81.60	80.85	79.51	75 30	64.13	55.90	45.80	60.52	74.48	78.75	55.27	67.21
	1879	52.9	55.40	64.30	67.00	74.80	79.00	81.80	79.30	77.20	71.50	64.10	59.50	57.53	70.60	79.43	65.03	68.15
	1880	63.00	59.08	65.50	71.20	75.50	80.30	82.60	81.50	77.00	68.00	56.00	53.10	62.52	75.67	80.37	59.03	69.05
	1881	50.40	56.30	59.90	67.20	77.00	83.00	84.40	82.80	80 10	75 20	61.27	59.20	55.53	75.73	82 43	65.20	69.72
Mean of 4 Years.	1876 to 1881	56.86	57.69	62.53	68.76	74.84	80.97	82.41	80.77	74.40	69.71	59.30	53.52	59.02	74.12	80.19	61.13	68.53
Mean of 42 Years.	1820 to 1881	56.30	58.02	64.33	69.40	75.00	81.34	83.23	83.06	79.58	70.25	62.20	55.43	69.28	82.29	71.00	57.04	69.48
	1882	67.70	62.50	67.90	72.50	74.40	81.20	80.50	80.00	77.60	73.30	62.80	54.00	71.60	80.60	71.20	61.47	70.79
	1883	56.54	62.59	61.89	71.16	74.23	81.26	83.69	83.17	79.20	75.32	63.52	60.28	69.09	82.61	72.68	57.71	71.17
Mean of 44 Years.	1820 to 1883	56.45	58.22	64.35	69.51	74.97	81.33	83.18	82.99	79.50	70.43	62.24	55.50	67.05	82.28	71.04	57.16	69.54

The preceding record has been constructed from the most reliable data extant, with reference to the climatology of New Orleans, namely: the meteorological records of the Military Post of New Orleans, extending over a period of twenty years, 1825-1853; the statistics published by Dr. Barton, embracing a period of nineteen years, extending from 1833 to 1853, and the manuscript of D. T. Lillie, Esq., and from reports of the Board of Health, and the records of the United States Signal Service.

From the preceding record of forty-two years, extending (with some in terruptions) from 1820 to 1881 inclusive, the mean annual temperature o New Orleans is 69.48°. According to the meteorological records of th Military Post of New Orleans, extending over a period of twenty-five year the mean annual temperature is given a fraction higher, namely, 69.9° whilst, according to Dr. Barton, it is much less, or 67.6°.

The statistics which I have presented in the preceding table must be re garded as the fullest and most accurate expression of the temperature o New Orleans, and we must accept the mean annual temperature as 69.48° with a range during the period specified of 72.50° maximum to 67.21° min mum annual temperature. The mean annual temperature of New Orlea is lower than that of Havana, Cuba, 75.9°; of Matanzas, Cuba, 78.3° Ubajay, Cuba, 73.4°; of Nassau, Bahamas, 78.7°; of Rio Janeiro, Sou America, 73.7°; of Vera Cruz, Mexico, 77 to 79.8°; of Kingston, Jamaic 78.7. The isothermal line of mean annual temperature of New Orlea passes through the north of Africa, through Morocco and Barbary, skirti the northern boundary of the Great Desert of Sahara, and crossing Egy in a line with the Isthmus of Suez, and in the latitude of Alexandria, a passes on through the northern portion of Arabia, the middle of Pers and Afghanistan, the north of India and the south of China. By climatic relations, and especially by its mean annual temperature, New O leans is connected with those portions of Africa and Asia from whence ha sprung in past ages some of the greatest plagues which have desolated human race. The isothermal 70°, for the year, which is very nearly th of New Orleans, is nearly on the parallel of 30°—rising above it at Gulf of California, and falling below in the interior and in Texas, it follo the northern coast of the Gulf of Mexico, and crosses the Atlantic a Africa nearly in a straight line. It bends north at the head of the R Sea, and across the desert until it strikes the Himalayas, from which po it turns southward and is below the Tropic of Cancer. Off the west co of California it falls nearly as low, its general course being in a right along the thirtieth parallel, from which it is abruptly turned southward approaching Canton from the west and in leaving the California co The last curvature is due to the now well-known masses of cold water that coast, and at the east of Asia it is apparently a mere continental eff which would have been felt here if the continent had occupied the plac the Gulf of Mexico.

It is remarkable that the average position of this line is further nort the New than in the Old World.

The average temperature of the spring in New Orleans is 69.58°, very nearly 12½° below that of the winter, 57.04°. The average spring winter temperatures of those places in which yellow fever is said by contagionists and quarantinists to be indigenous are as follows: Hav Cuba, spring 75.7°, winter 68.4°; Kingston, Jamaica, spring 78.1, w 76.1; Matanzas, Cuba, spring 78.9°, winter 73.4°; Nassau, spring 7 winter 70.7 Rio Janeiro, spring 74.7°, winter 79.1°; Vera Cruz, Me spring 77.8-78°; winter 77-79.8°. The mean summer temperature of Orleans is 82.53°, of Havana 84.2, of Vera Cruz 81.5°. The mean autu temperature of New Orleans is 69.48°, of Havana 75.9°, of Vera 77.0--79.8°.

The most marked difference between the climate of New Orleans that of Havana, Cuba, is that the winter is colder by 11° F., and the s colder by 6° F., in the former. The average temperature of the summ New Orleans is 1° higher than that of Vera Cruz, and 1.7° cooler that of Havana: the average autumnal temperature of New Orlea

4.8° lower than that of Havana, and between 7° and 8° lower than that of Vera Cruz. It is evident, therefore, from these results, that the differences of climate between New Orleans and Havana are not so great as to warrant the dogmatic and oft-repeated assertion that yellow fever cannot originate *de novo* in New Orleans; neither do they sustain the lucubrations about the so-called hibernation of the yellow fever germ.

If the curve of the monthly temperature of New Orleans be projected upon a chart, it will be found to rise in January from a mean temperature of 56.30° to 58.02° in February, 64.33 in March, 69.40° in April, 75° in May, 81.34° in June, 83.23° in July, and 83.06° in August; the mean temperature of June and July then descends to 79.58° in September, 70.25° in October, 62.20 in November, and 55.43° in December. The rise and progress of the temperature during the summer corresponds to the rise and progress of yellow fever in New Orleans.

The maximum temperature, 100° F., for the entire series of years 1817–1881, was attained in 1841 and 1850; in the former year about 1800 deaths were occasioned by yellow fever, and in the latter the victims numbered only 107. The next highest temperatures with the annual mortality by yellow fever, were as follows: 1874, 99°, deaths from yellow fever, 11; 1838, 98°, no epidemic; 1840, 98°. 3 deaths; 1873, 98°, 226 deaths; 1860, 97°, 15 deaths; 1881, 79°, no deaths; 1877, 96.5°, 1 death; 1826, 96°, 5 deaths; 1839, 96°, 800 deaths; 1852, 96°, 456 deaths; 1843, 95°, 1000 deaths; 1855, 95°, 2615 deaths; 1875, 95°, 61 deaths; 1878, 95°, 4056 deaths; 1847, 94°, 2600 deaths; 1848, 94°, 872 deaths; 1849, 94°, 769 deaths; 1853, 94° 7849, deaths; 1862, 94°, 2 deaths; 1863, 93.5°, 2 deaths; 1864, 93.5°, 6 deaths; 1879, 91°, 19 deaths; 1880, 92° 2 deaths. Such facts indicate that the prevalence of yellow fever in New Orleans is not necessarily associated with the prevalence during the hot months of the highest degree of heat.

The minimum temperatures, were reached in the following years, with the accompanying mortality from yellow fever: 1870, 16° F., 587 deaths; 1852, 17°, 456 deaths; 1864, 18°, 6 deaths; 1872, 19°, 39 deaths; 1877, 21°, 1 death; 1838, 22°, no epidemic; 1878, 23°. 4056 deaths; 1876, 24°, 42 deaths; 1826, 25°, 5 deaths; 1845, 26°, 2 deaths; 1850, 26°, 107 deaths; 1879, 20°, 19 deaths; 1880, 20°, 2 deaths; 1881, 31° no deaths. Such facts would seem to sustain the proposition, that extremes of cold were unfavorable to the generation of yellow fever. But a more critical examination will show, that this proposition should not be unconditionally accepted: for the effects of the extreme cold temperature of each year should be considered in the months of January, February and March, and of the months of December, November and October of the year immediately preceding. The early supervention of cold weather and of frost without doubt, exerts a marked effect, in arresting the progress of epidemics of yellow fever, and it would also appear that an excessive degree of cold in the winter preceding, tended to remove or retard the operation of the cause or causes inducing yellow fever. It is worthy of note, that during the entire period covered by the following table, in almost every year, the temperature fell in New Orleans, during the winter months, to that point which insured the occurrence of frost, and the induction of that low point of temperature, which insured the arrest of the epidemic constitution necessary to the generation and propagation of yellow fever.

The connection of yellow fever with the rain-fall is worthy of study; and as a scientific basis for this investigation we have consolidated from the most reliable sources the preceding table.

EXTREME (MAXIMUM AND MINIMUM) TEMPERATURE, MONTHLY AND ANNUALLY, IN NEW ORLEANS, LA., DURING A SERIES OF YEARS. CONSOLIDATED BY JOSEPH JONES, M. D., NEW ORLEANS, LATITUDE 29° 57′ N., LONGITUDE 90° 5′ W. ALTITUDE 10 FEET.

YEAR.	January.		February.		March.		April.		May.		June.		July.		August.		Sept.		October.		Nov.		Dec.		Year	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	M .	Max.	Min	Max.	Min.
1817	....	....	....	....	....	....	....	....	....	....	92	....	92	...	94	....	85	....	....	....	....	....	....	....	94	.....
1819	70	41	74	48	79	45	82	50	84	71	89	74	88	73	85	76	86	69	83	44	77	53	70	37	89	37
1826	77	25	84	42	82	52	88	52	92	62	93	75	96	78	94	76	90	64	80	61	83	48	72	34	96	25
1838	77	29	80	26	90	40	91	50	91	52	98	64	98	72	90	76	91	63	87	45	84	34	80	22	98	22
1839	74	28	76	35	79	32	88	50	96	64	96	69	95	73	96	74	94	65	86	60	82	30	67	29	96	28
1840	78	28	84	36	88	52	90	54	94	57	94	70	98	80	100	74	93	64	90	42	80	32	78	32	98	28
1841	76	29	74	29	80	50	91	53	90	60	94	72	100	80	90	76	90	62	86	40	84	30	80	36	100	29
1842	82	35	78	32	86	50	82	55	85	58	87	72	88	73	87	72	89	72	82	47	78	33	79	31	89	31
1843	74	29	74	28	76	33	86	49	87	57	87	71	94	72	94	66	95	66	88	38	82	55	76	35	95	28
1844	76	37	80	38	82	42	85	45	89	67	89	69	92.5	73	92 5	69	91.5	61	85.5	46	80	55	75	33	92.5	33
1845	72	36	79	34	80	42	86	52	85	57	91	67	93	73	92	72	88	63	79	51	73.5	30	69	25	93	25
1846	70	32.5	68.5	40	73	50	87	57	89.5	63	89	68	90	74	89.5	70	90.5	68	84	46	81	32	81	40	90.5	32
1847	78	27	79	35	80	41	84	52	87	62	94	71	90	71	91	71	91	66	87	51	83	29	76	31	94	27
1848	78	31	77	36	79	43	81	52	88	59	94	70	94	74	92	70	94	63	87	52	75	37	76	30	94	30
1849	76	37	77	35	88	41	85	42	92	65	92	70	92	73	92	70	94	63	87	52	75	37	76	30	94	30
1850	79	34	84	26	85	36	90	38	92	48	93	58	95	70	100	69	97	62	90	42	85	40	80	24	100	26
1851	81	30	82	34	84	37	90	48	90.5	54	94	71	94	76	95	76	92.5	62	89	47	83	43	81	26	95	25
1852	74	17	80	39	85	39	80	47	90	67	93	70	95	74	94	74	90 5	69	96	55	84	39	80	39	96	17
1853	74	32	77	38	77	44	86.5	48	91	58	92	73	93	71	94	72	92.5	60	86	48	80	45	74	34	94	32
1854	79	30	87	37	83	41	87.5	49	91	63	96	71	94	77	95	79	94	75	87	67	81	44	72	37	96	30
1855	60.4	50.4	73	30	80	29	84	45	95	65	92	70	93	76	93	78	93	76	78	42	82	48	72	30	95	29
1856	59	30	70	27	78	47	80	63	89	68	89	78	90	79	90	78	87	62	74	53	82	45	76	35	90	27
1857	68	28	78	42	78	43	79	47	85	58	88	73	88	74	87	78	87	70	79	57	80	39	78	42	88	28
1858	73	50	70	40	77	42	82	56	84	65	86	72	90	78	90	73	87	70	84	64	73	43	76	43	90	40
1859	68	36	78	44	81	52	86	54	89	68	90	73	90	76	91	75	89	72	82	50	79	44	77	32	91	32
1860	72	35	75	38	80	54	93	65	89	65	94	77	97	83	95	77	93	65	86	54	79	40	74	34	97	34
1861	....	....	....	....	....	....	79	50	88	62	88	69	89	64	88.5	71	96	52	83	54	76	43	78	34	89	.....
1862	77	38	77.5	35	84	38	81	44	87	64	93	65	93	70	94	72	89	70	86	34	70	32.5	76	33	94	32 5
1863	72	23	79	27	77	37	81.5	40	87	50	93	67	93 5	70	92	63	90	50	82	44	78	23	74	22	93.5	22
1864	74	18	76	23	73	30	84.5	44	88	53	91	63	93.5	63	92 5	74	90.5	62	83	42	83 5	24	79	21	93.5	18
1865	71.5	26	75	26 5	80	33	84	47	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1867	....	....	....	....	....	....	....	....	....	..	90	70	92	70	92	79	87	75	85	52	....	....	....	....	92	.....
1869	....	....	....	....	87	36	90	46	85	55	91	65	92	71	93	70	89	56	82	40	79	38	70	31	93	.....
1870	72	31	75	31	81	31	78	43	92	52	91	62	92	68	92	70	89	62	82	47	82	31	76	16	92	16
1871	72	27	78	41	78	42	84	50	86	52	92	69	92	72	92	73	89	55	85	54	84	41	79	26	92	26
1872	76	26	75	31	74	36	84	57	89	57	91	71	93	72	93	74	90	66	83	49	79	29	72	19	93	19
1873	66	25	81	43	81.5	38	86	45.5	98.5	57	92	72.5	98	70.5	92.5	71	91	70.5	88	38	77	37.5	78	32	98	25
1874	77	32	77.5	41.5	84	50.5	82	40.5	92.2	57	94	74	95	72	99	73	90.5	63.5	86	51	83.5	39.5	78.5	42.5	99	32
1875	77.5	29	80	31	81	36.5	82	51	90	62	94.5	67	95	74	92	69	94	60	82	51.5	83	46	79	35 5	95	29
	78 5	38 5	80	34 5	81	34.5	84	52	89	53	92	69	91	79	89	78	88	61	77	50	73	30	70	24	92	24
	....	....	....	....	....	....	....	....	....	....	94	67	96	73	96.5	73	92	63	84	53	78	34	71	34	96 5	21
	78	30	79	37	83	..	....	....	....	56	94	....	....	....	....	....	....	....	83	44	82	35	77	23	95	23

1880	75	42	77	43	81	42	84	49	88	58	90	69	92
1881	73	31	78	36	77	42	84	38	90	66	97	71	96
1882	77	38	79	39	81.5	51	86	63	88 3	58.5	91.8	67.9	92
1883	77	33.5	80	39.5	80.3	44	84	51	88	56.5	91.8	68.4	94.1
Maximum and minimum during 47 years, 1817-1883 ...	82	17	84	23	90	29	91	38	96	48	98	58	100

1880	71	92	91	90	63	84	52	75	34	78	20	92	20
1881	73	93	74	91	63	88	57	80	31	77	40	97	31
1882	69.8	91	72.5	89	61.5	85	59.5	82	36.8	75.5	29.5	92	29.5
1883	74.5	92.5	73.9	90.5	63	88.7	58.9	81	36.8	75.7	27.8	94 1	27.8
Maximum and minimum during 47 years, 1817-1883 ...	63	100	63	99	50	96	34	84	23	81	16	100	16

Whilst the summers are never excessively hot, and at the same time t thermometer during the winter season, in Louisiana, rarely falls below t freezing point, and even in the severest weather never reaches a poi lower than 16 degrees below the melting of ice.

The great valley, walled in on the east and west by two diverging mou tain chains, and presentinng between the Gulf of Mexico and the Arct Sea, no elevation much to exceed 2000 feet, there is no great barrier to arre the flow of the hot, moist southerly winds of summer, or the cold, nort erly winds of winter. Along the Gulf coast, the climate assimilates in features to that of the tropics—clear, blue skies in the morning, starlig nights, gentle showers at midday, and a luxuriant vegetation, with spre ing leaves. But even here, the fluctuations occasioned by the change air currents, are very great. The south winds sweeping over the Caribbe Sea and the Gulf of Mexico, are moist and warm, while the north win meeting with no barrier to arrest their progress, and being overland, dry and cold; and hence the changes of temperature are abrupt.

At New Orleans snow occasionally falls, and for a short time whitens ground. The frosts which accompany the "northers' are of sufficient tensity to destroy the sugar cane and cotton plants, but at the same ti while they do not strip the trees of their leaves, they hardly admit o perpetually verdant vegetation. The processes of fructification and e liation are arrested, and the distinction between winter and summer faithfully preserved. It results from the sudden cool changes in win that the human constitution in Louisiana is invigorated, and those ca which produce the various forms of malarial diseases are temporarily pended. While, on the other hand, the warm, moist air of the Gulf h singular, softening and beautifying effect upon the human form, and golden climate of Louisiana produces the most beautiful and refined wom

The climate of Louisiana is still further varied in the salubrious and vated good uplands of North Louisiana, which cover the greater pa the parishes of Caddo, DeSoto, Sabine, Bossier, Webster, Red River, borne, Bienville, Union, Jackson, Ouachita. Morehouse, and a small of Caldwell. In the "Florida parishes," east of the Mississippi, a t of country similar to the good uplands of North Louisiana is found i eastern part of the two Feliciana's, and in the northeastern corner of Baton Rouge. A great part of the good upland region is extremely h some of the ridges being almost mountainous in elevation, reaching a he of at least 300 feet above the valley of the main streams, and from 4 500 feet above the Gulf of Mexico.

OBSERVATIONS OF THE ELEVATED TEMPERATURE SUNSTROKE OR HEAT APOPLEXY OF JUNE, 1881.

EXTRACTS FROM THE PROCEEDINGS OF THE BOARD OF HEALTH, JU 1881.

The President, Dr. Joseph Jones, directed the attention of the boa the relations of sudden deaths to elevated and continuous solar heat:

ELEVATED TEMPERATURE OF JUNE, 1881.

During the week ending June 18, the maximum temperatures are as follows: J 91° F.; 13th, 92°; 14th, 95°; 15th, 94°; 16th, 96°; 17th, 92°: 18th, 91°.

The mean of the maximum temperature during this period was 93°, and the m the minimum temperature 80.1°, giving an average range between the hottest pe the day and the coolest period of the night of only 12.9°. The mean barometric p

was high, being 30.01 inches, or that which the instrument maintains at the level of the sea. During this hot weather, which has continued unabated up to this day, June 23, there has been rain only on the eighteenth, when less than an inch of water (0.64 inch) fell, and the deleterious effects of the prolonged and excessive heat have been in a measure counterbalanced by the low mean humidity, which was 66°. While dry weather with elevated temperature may lead to sunstroke and fatal congestions of the internal organs, at the same time the surface of the earth is dried, noxious vapors are dissipated, fermentation is in a measure arrested, and malarial fevers diminished in number and intensity. The effects of this excessive and prolonged heat were shown in the marked increase of deaths caused by sunstróke, congestion of the brain and apoplexy. Thus for the week ending June 11, 1881, the deaths from the causes just indicated were as follows: Sunstroke, 2; congestion of the brain; 4; apoplexy, 2; total from these three causes, 8. For the week ending June 18, 1881, sunstroke, 7; congestion of the brain, 15; apoplexy, 4; total, 26 deaths.

The deaths from congestion of the brain and apoplexy were, without doubt, due largely to the causes inducing the deaths referred to as sunstroke, and we observe that during the last week they had increased more than three-fold.

The total deaths of the week ending June 18, were 189, about one-seventh of which were undoubtedly caused by or traceable to the effects of the heat upon the human system; but, in reality, a much larger number were due to heat, as we find that nearly one-half, or eighty-six deaths, occurred among children under ten years of age, and of this number 51 were under one year of age. Cholera infantum caused 17 deaths, tabes mesenterica 9, enteritis 13, dysentery 10, diarrhœa 5, teething 9, phthisis pulmonalis 14. Total from these diseases 90; that is one-half the mortality was caused by these well-known diseases, recognized as existing in all cities and towns. If to these diseases be added the twenty-six sudden deaths most directly referable to elevated temperatures, we have a grand total of 116 deaths. A critical analysis of the remaining seventy-three deaths reveals the important fact that only six deaths were caused by the various forms of malarial fever, as follows: Remittent one, congestive one, malariel foul. It is a remarkable and encouraging fact that in a city containing 220,000 inhabitants, and situated below the level of the high water of the Mississippi River, only six deaths were caused by malarial fever during the seven days of intense heat.

ELEVATED TEMPERATURE IN THE MONTH OF JUNE, IN THE CITY OF NEW ORLEANS DURING A SERIES OF YEARS—1817 TO 1881.

Years.	Maximum.°	Minimum.°	Years.	Maximum.°	Minimum.°
1817	92		1857	88	73
1819	89	74	1858	86	72
1826	93	75	1859	90	73
1838	98	64	1860	94	77
1839	96	69	1861	88	69
1840	94	70	1862	93	65
1841	94	72	1863	93	67
1842	87	72	1864	91	63
1843	87	71	1867	90	70
1844	89	69	1869	91	65
1845	91	67	1870	91	62
1846	89	68	1871	92	69
1847	94	71	1872	91	71
1848	94	70	1873	92	72
1849	92	70	1874	94	74
1850	93	58	1875	94	67
1851	94	71	1876	92	69
1852	93	70	1877	94	67
1853	92	73	1878	93	66
1854	96	71	1879		
1855	92	70	1880		
1856	89	78	1881	96	78

It will be observed from the preceding observations that only in a single year (1838) was the heat greater than that of June, 1881, and in only two years was it equal, namely, 1839 and 1854.

The mortuary records of New Orleans establish the fact that in past years sunstroke has not caused any great or unusual mortality. The following table, giving the number of deaths from sunstroke in New Orleans during the periods specified, sustains the preceding proposition:

DEATHS FROM SUNSTROKE IN NEW ORLEANS.

Years.	Deaths.	Years.	Deaths.	Years.	Deaths
1849	20	1865	22	1874	25
1850	18	1866	18	1875	4
1853	21	1867	7	1876	7
1856	12	1869	4	1877	9
1857	4	1870	6	1878	2
1858	20	1871	8	1879	1
1863	6	1872	7	1880	2
1864	1	1873	15	1881	..

It should be observed that the preceding data relates to the total nu ber of deaths from sunstroke during the entire year. It is evident th New Orleans has never suffered from such devastating effects of solar h as have upon several occasions occurred in New York, Philadelphia a St. Louis.

The following table illustrates the relations of apoplexy, sunstroke a congestion of the brain to the variations of temperature:

DEATHS FROM SUNSTROKE, APOPLEXY, AND CONGESTION OF BRAIN DUR THE YEARS 1840 TO 1865.

Years.	Cong. of Brain.	Apoplexy.	Sunstroke.	Total.
1849	118	101	20	239
1850	101	107	68	276
1853	111	133	21	265
1856	97	92	12	201
1857	92	105	4	201
1858	156	114	20	240
1863	81	61	6	148
1864	111	75	1	187
1865	97	100	22	219

TABLE ILLUSTRATING DEATHS FROM SUNSTROKE, APPOPLEXY AND CONGESTION OF THE BRAIN, TOGETHER WITH THE MONTHLY MEAN TEMPERATURE DURING THE YEARS 1866 TO 1881, INCLUSIVE.

Years.	May.				June.				July.				August.				September.				October.				Total Six Months.		
	Sunstroke.	Apoplexy.	Congestion of Brain.	Mean Temperature.	Sunstroke.	Apoplexy.	Congestion of Brain.	Mean Temperature.	Sunstroke.	Apoplexy.	Congestion of Brain.	Mean Temperature.	Sunstroke.	Apoplexy.	Congestion of Brain.	Mean Temperature.	Sunstroke.	Apoplexy.	Congestion of Brain.	Mean Temperature.	Sunstroke.	Apoplexy.	Congestion of Brain.	Mean Temperature.	Sunstroke.	Apoplexy.	Congestion of Brain.
1866	..	.....	.....	.....	..	12	8	.....	9	8	9	.....	9	12	12	.....	..	5	5	.....	..	6	5	.....	18	43	39
1867	..	6	15	.....	..	5	9	.....	5	4	18	.....	1	6	22	.....	1	4	23	.....	..	8	11	.....	7	33	98
1869	..	4	19	.....	..	5	9	.....	3	10	15	.....	1	7	7	.....	..	13	7	.....	..	7	5	.....	4	46	62
1870	..	4	9	.....	1	12	4	.....	2	12	8	.....	3	11	14	.....	..	11	13	.....	..	2	4	.....	6	52	52
1871	..	8	5	.....	1	8	20	.....	4	6	17	.....	2	5	21	.....	1	7	12	.....	..	11	8	.....	8	45	83
1872	..	6	22	.....	2	4	12	.....	2	10	17	83.8	3	11	26	84.4	..	3	12	81.4	..	2	18	69.8	7	36	107
1873	..	8	21	75.2	..	10	19	81.6	15	11	29	83.6	..	6	14	82.3	..	9	15	79.5	..	12	23	68.2	15	56	111
1874	..	8	12	76.9	..	14	10	82.6	2	8	22	82.3	23	11	76	85.0	..	5	14	80.4	..	11	17	70.9	25	67	151
1875	..	3	14	77 4	..	5	15	80.9	2	8	16	83.1	1	5	3	80.1	1	9	13	77.2	..	1	8	63.1	4	31	69
1876	..	6	15	73.2	..	5	9	81.6	5	4	18	80.8	1	6	22	79.5	1	4	23	75.3	..	8	11	64.1	7	33	98
1877	..	7	12	73 5	3	7	22	78.1	3	6	9	81.7	3	11	....	83.3	..	7	12	78.4	..	5	6	70.5	9	43	61
1878	..	7	6	75 5	..	9	9	81.9	2	13	11	83.8	..	7	33	83 6	..	5	29	78.7	..	6	27	71.4	2	47	115
1879	..	9	10	74.8	1	4	9	79.0	..	13	8	81 8	..	4	7	79.3	..	8	4	77.2	..	7	10	71.5	1	45	48
1880	..	3	12	75.5	1	11	16	80.3	..	12	10	82 6	1	10	9	81.5	..	11	19	77.0	..	5	12	68.0	2	52	78
1881	..	7	15	79 0	*9	8	21	83 0	..	.....	.....	.....	..	.....	.....	.....	..	.....	.....	.....	..	.....	.....	.....	.....	.....	.....

*Comprises only the first eighteen days in June,

The statistics of the great Charity Hospital still further demonstrate that the citizen of New Orleans are not liable to sun-stroke.

I have examined carefully the records of the great Charity Hospital of this city durin a period in which a population greater than that of New Orleans at this moment, an exceeding 300,000, were gathered within its walls. The following table presents t total number of cases and deaths from sun-stroke in the Charity Hospital for the yea specified :

SUN-STROKES.			SUN-STROKES.		
Years.	Cases.	Deaths.	Years.	Cases.	Death
1842	4	2	1860	40	32
1843	.....	.....	1864	2	1
1844	.....	.....	1866	20	7
1845	27	17	1867	10	1
1846	2	1	1868	4	1
1848	10	4	1869	5	2
1849	3	2	1870	9	2
1850	57	32	1871	.....	.....
1851	26	26	1872	13	7
1852	29	16	1873	11	7
1853	20	12	1874	1	.....
1854	52	13	1875	2	2
1855	11	5	1876	.....	.....
1856	9	3	1877	2	1
1857	2	1	1878	6	1
1858	10	4	1879	.....	.....
1859	12	10	1880	.....	.....

From the preceding statistics it is established that during a period of t hirty-f years in the Charity Hospital, in which the annual admissions from all diseases va from 18,476 in 1850 to 4,277 in 1842, the total cases of sun-stroke entered upon the bo of the Charity Hospital were 399, and the deaths 212. No relationship whatever can traced in the statistics of the Charity Hospital between sun-stroke and yellow fever

Thus, the largest numbers of cases and deaths from sun-stroke occurred in 1845, 1 1851, 1852, 1854 and 1860. The cases and deaths from yellow fever in the Charity H pital during these years were as follows :

1845—No deaths, 1 case.
1850—6 cases, 4 deaths.
1851—7 cases, 2 deaths.
1852—496 cases, 339 deaths.
1854—2,743 cases, 1,233 deaths.
1860—2 cases, no deaths.

On the other hand, in 1853, when there were 3,217 cases and 1,890 deaths from yel fever, only 20 cases and 12 deaths from sun-stroke were recorded. In 1858, 2,727 c and 1,382 deaths from yellow fever, 10 cases and 4 deaths from sun-stroke. In 1867, 1 cases and 672 deaths from yellow fever, 10 cases and 4 deaths from sun-stroke. In 1 817 cases and 411 deaths from yellow fever, 6 cases and 1 death from sun-stroke.

It is evident, therefore, that the mere occurrence of prolonged and elevated solar forms no ground for the prognostication of evil with reference to the origin or spre yellow fever and the various forms of malarial fever.

There are three well-defined forms or varieties of sun-stroke, under the designatio sun-stroke, coup de soleil, isolation, heat apopiexy, heat asphyxia, thermic fever, ar fever and sun fever. Careful observers have recognized certain essentially diffe pathological states, which are not unfrequently confounded.

Thus excessive heat, whether projected in rays directed from the sun, or accumul in close, ill-ventilated rooms, may cause :

1. Exhaustion, ending in simple syncope, during great fatigue or over-exertion, v there is depression of vital power during exposure to high temperature.

The skin is pale, cold and moist, and the pulse feeble, indicating depression of n force and muscular power. Death may occur in this state from failure of the heart, with proper care and treatment recovery frequently takes place.

2. The direct rays of a powerful sun often induce an effect upon the brain and sp cord analagous to that known to surgeons and physicians as shock. During the e sure of the head and spine to the direct rays of a powerful sun, when the atmosphe much heated and the nervous energy is so depressed by over-fatigue, illness or dis tion, asphyxia or aphnœa (stoppage of breath) may come on, after premonitory s toms of depression and weakness. The brain and respiratory nerve centres are wholmed by the sudden rise of temperature, respiration and circulation fail, and often results. Without doubt this sudden and fatal action of the rays of the sun is

quently aggravated by or consequent upon the improper and free use of alcoholic stimulants and to excess of various kinds which have impaired the tone and vigor of the nervous system. Pre-existing disease of the heart or kidneys, brain and spinal cord, may in like manner give a peculiar susceptibility to the effects of heat. The susceptibility is also sometimes established by the effects of severe grades of fever.

3. The rapid elevation of the temperature of the blood, and of the entire body, above the normal standard, either from direct exposure of the sun's rays, or more frequently to a higher temperature of the surrounding medium. In the thermal fever caused by the action of heat whether artificially applied to the nerve centres, or directly received from the sun, thereis paralysis of the vaso-motor nerves, failure of the respiration and circulation, followedby asphyxia and death. Even when recovery takes place after this form of sunstrokeit is often tedious and imperfect, and sometimes ends in serious impairment to the intellect. The sudden rise of temperature from the normal standard of health, 99° F. to from 108° to 111°, may, as is well known, occur independently altogether of the direct action of the sun's rays, during the night, in crowded, hot, badly ventilated rooms, in persons depressed by facigue, foul air, overcrowding and alcoholic stimulants. As the normal temperature of the body is maintained at a certain standard, at the Poles and in the hot regions of the Tropics, by the relative activity of the respiratory and cutaneous funtions, and the tempeature and evaporation of the moisture from the skin and lungs, it is evident that incrersed chemical change due to overheating or to abuse of alcoholic stimulants, and the suppression of the functions of the skin and lungs by overcrowding, and hot and foul air, must be prolific of mischief during such a heated term as we are now experiencing. Alcoholic stimulants, when used to excess, may exert deleterious influences, more especially during the hot weather, by overwhelming the nerve centres, paralyzing the vaso-motor nerves, and inducing fatal congestions. Such instances have frequenty been observed by the experienced physicians of New Orleans.

It is not the province of this Board to enter into the question of the treatment of diseases; and when its executive head has faithfully stated the nature and causes of the fatal and prevailing forms of disease, and placed the public in possession of the essential facts of sanitary and hygienic science, questions of remedial measures and agents may be left where they properly belong, namely: In the hands of the enlightened and faithful physicians of New Orleans, who have been noted for their skill, humanity and patriotism. It may be claimed that the physicians and surgeons of New Orleans have contributed as much to the cause of suffering humanity as any body of scientific and learned men of equal numbers in the civilized world.

During this century alone the medical profession of New Orleans have faithfully and gratuitously attended in the great Charity Hospital patients from every State in the Union, and from every country under the sun, to a number which reached over 450,000, or twice the present population of this city.

RELATIONS OF MALARIAL AND YELLOW FEVER TO CLIMATE.

Malarial fevers prevail chiefly in the summer and autumn in New O leans, but they are never absent during any portion of the year. Yello fever on the other hand prevails chiefly during the months of June, Jul August, September and October, the heaviest mortality occurring as general rule in August and September, as will be seen from the followi tables:

MONTHLY DEATHS BY YELLOW FEVER DURING A PERIOD OF 32 YEARS, 1847-1878.

YEAR.	May	June.	July.	August.	September.	October.	November.	December.	Total deaths by Yellow Fever.	Date of First Case.
1847	.....	.....	74	965	1100	198	33	.....	2306	July 6th.
1848	....	4	33	200	467	226	20	.....	808	June 21st.
1849	.....	.....	1	17	214	416	112	9	769	July 28th.
1850	1	.....	4	62	33	4	.....	.....	107	1 death January, 2 March, 1 May.
1851	.....	.....	.....	8	6	2	1	.....	17	
1852	.....	.....	2	8	91	198	105	11	456	July
1853	2	31	1521	5133	982	147	28	4	7849	May 22d.
1854	.....	2	29	532	1234	490	131	7	2425	First death June 12th.
1855	.....	5	382	1286	874	97	19	7	2670	June 19th.
1856	.....	.....	.....	14	40	16	4	7	74	June 28th.
10 Years.	3	42	2046	8225	5041	1794	453	55	17481	
1857	.....	1	1	1	8	98	82	8	200	1 death reported in January.
1858	.....	2	132	1140	2204	1137	224	5	4845	1 death reported January 10th.
1859	.....	.....	....	.....	1	59	28	3	91	June.
1860	.....	.....	3	7	5	.....	.....	.....	15	
1861	.....	.....	.....	.....	.....	.....	.....	.....	.....	
1862	.....	.....	1	.....	1	.....	.....	.....	2	
1863	.....	.....	.....	.....	2	.....	.....	.....	2	About 100 cases in U. S. river fleet.
1864	.....	.....	.....	.....	.....	4	1	1	6	About 200 cases and 57 deaths U. S boats and river fleet.
1865	...	.....	.....	1	.....	.....	.....	.....	1	
1866	.....	.....	.....	5	56	89	31	4	192	1 death 10th August.
10 Years.	.....	3	137	1154	2277	1387	366	21	5354	
1867	.....	3	11	255	1637	1072	103	26	3107	1 case died June 10th.
1868	.....	.....	.....	....	.....	5	.....	.....	5	October 5th, died in Charity Hospi
1869	.....	.....	1	.....	..	2	.....	.....	3	July 17th.
1870	.....	1	.....	3	231	242	106	5	588	May 26th.
1871	.....	.....	...	2	9	22	19	2	54	July 30th.
1872	.....	.....		1	5	24	7	2	39	August 28th.
1873	.....	.....	3	19	208	79	17	.....	226	July 9th.
1874	.....	.....	.....	.....	2	6	2	1	11	August 19th.
1875	.....	.....	.....	5	24	20	9	3	61	August 8th.
1876	.....	.....	.....	1	19	17	4	1	42	August 11th.
10 Years.	.....	4	15	286	2135	1489	267	40	4136	
1877	.....	.....	.....	...	.....	.....	1	.....	1	November.
1878	2	.....	50	974	1893	1044	90	3	4056	May 25d.
2 Years.	2	.....	50	974	1893	1044	91	3	4057	
32 Years.	5	49	2248	10639	11346	5714	1177	119	3128	

From the preceding table, it is evident that as a general rule the epidemics, as those of 1847, 1849, 1853, 1854, 1855, 1858, 1867 and commenced early in the hot months (May, June and July) and att their maximum intensity in August and September. Thus durin period of thirty-two years, the deaths from yellow fever in New Or were as follows: January, 6; February, 0; March, 2; April, 0; Ma June, 49; July, 2248; August, 10,639; September, 11,346; October, November, 1177; December, 119.

The curve of yellow fever, therefore, corresponds to a certain with the curve of temperature. Thus, from the records of thirty

years, which I have consolidated and calculated from the most reliable data, the mean temperature of New Orleans is as follows: January, 56.28; February, 58.03; March, 64.27; April, 69.41; May, 75.00; June, 81.35, July, 183,21; August, 83.14; September, 79.64; October, 70.27; November; 62.30; December, 56.43; spring, 69.56; summer, 82.53; autumn, 70.75; winter, 56.91; year, 69.51 F.

The origin and spread of yellow fever, therefore, depends absolutely upon an elevated temperature, ranging from 70° to 85°, and its decline depends upon a mean temperature ranging from 65° to 56° F. These figures, of course, relate to the mean or average monthly temperature, the extremes being much higher or lower, ranging during the year, in New Orleans, as shown by meteorological observations extending from 1817 to 1878, from 17° to 100° F.

On the other hand, the various forms of malarial fever are more uniformly distributed throughout the months of the year, although this class of diseases, as well as yellow fever, show their maximum intensity in number of cases and fatality in those months of the year in which the temperature is most favorable to the putrefaction of animal and vegetable matters, and the development of the lower and most prolific forms of animal and vegetable life, and especially those forms which are active agents in putrefaction and fermentation. Thus, the deaths caused by the various forms of malarial fever were, in 1878, as follows: January, 6; February, 3; March, 9; April, 15; May, 12; June, 13; July, 25; August, 136; September, 146; October, 111; November, 41; December, 6.

The mortuary records, however, give but an imperfect and delusive view of the relative prevalence of the various forms of paroxysmal or malarial fever in New Orleans, from the well-known fact that these diseases rarely prove fatal. The favorable results obtained in the treatment of intermittent, remittent and congestive malarial fever, are, at the present day, mainly due to the free and prompt administratiion of quinine by the physicians of this city and of other parts of the Southern country.

The relationship of the forms of malarial fever to the climate and seasons, and to other diseases as yellow fever, are best established by the statistics of fever hospitals situated in malarial districts, where also yellow fever is at times endemic and epidemic.

The records of the Charity Hospital of New Orleans furnish the best field for such inquiries, as it has been justly regarded as one of the great fever hospitals of the world. The following statistics will serve as illustrations of the numerical relations of malarial fevers to climate and yellow fever.

It appears frsm the records of the Charity Hospital, that during a period of ten (50) years—January 1, 1841, to January 1, 1851—there were admitted into this hospital, 91,892 patients; of which number there were admitted, *all the different forms of fever*, 45,149; and among these last, for intermittent fevers, 25,183.

It would thus appear that nearly one-half of all the patients admitted into this hospital were for the different forms or types of *fever* and that *more than half of these were* intermittents. It should be mentioned that this vast number of patients included a lunatic asylum, having from sixty to ninety inmates up to June 1848, when it was removed to Jackson. This large number of fever patients included many that were imported by sea, and brought from neighboring States and foreign countries, and furnished also by the army of Mexico, which twice passed, during this period, through New Orleans. The intermittent and paroxysmal form of fevers mostly originate in the Mississippi Valley, whilst the continued fevers are mostly imported.

The following statement will show the prevalence of intermittent fever at the different seasons of the year, for the time specified:

TABLE OF ADMISSIONS OF CASES OF INTERMITTENT FEVER IN CHARITY HOSPITAL O NEW ORLEANS, IN THE DIFFERENT SEASONS OF THE YEAR—1841-1849, INCLUSIVE.

YEAR.	Spring.	Summer.	Autumn.	Winter.	All Fevers.	Yellow Feve
1841	112	403	177	92	1991	1113
1842	114	453	394	135	1758	410
1843	85	208	413	137	2222	1053
1844	117	469	732	231	2207	152
1845	180	353	664	206	1763	1
1846	236	569	1045	218	2603	148
1847	391	508	691	602	6901	2811
1848	282	689	874	535	6361	1234
1849	420	1701	3738	1275	7575	1060
Total	1937	5353	8718	2431	33,381	7982

During the years specified, there was but one single year (1845) in whic New Orleans was exempt from yellow fever,

It is evident, from this table, that intermittent fever prevails in New O leans the year round, gradually increasing from the winter up to th autumn, when it begins to decline. Whilst variations appear in differe seasons and years, and whilst the cases were most numerous when the was less yellow fever, still intermittents are never absent, even when yello fever committed its greatest ravages, as in 1841, 1847, 1848 and 1849.

If, during the nine years specified, the months be selected in which yello fever prevailed to the greatest extent, the following relations to the cas of this disease and malarial fever will be established:

FEVER STATISTICS, CHARITY HOSPITAL, NEW ORLEANS, LA. TABLES SHOWING T ANNUAL AND MONTHLY ADMISSIONS OF THE DIFFERENT FEVERS.

Year.	Total Admissions.	FEVERS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1841	4380	Intermittent	3	27	45	39	28	65	187	151	18	66	93	72
		Typhoid	1										5	6
		Congestion	4	3	1				7	3		3	1	2
		Remittent	3	2		2	9	6	31	13	5	1	7	2
		Malignant Intermittent							3	3				
		Yellow								174	642	252	37	8
		Bilious												3
		Total	11	32	46	41	37	71	228	344	665	322	143	93
1842	4404	Intermittent	45	29	35	39	45	124	160	169	144	140	110	61
		Remittent	4		1	3	4	8	12	34	41	35	11	3
		Typhoid	9	2				4			2	2	2	1
		Bilious				2		3	9	3	1	2	2	1
		Congestive	1		3	3	2		10	5	4	9	2	1
		Gastric					1	2	6	1				1
		Catarrhal						1				1		1
		Yellow								47	247	93	23	
		Nervous										1		
		Adynamic										1		
		Total 1842	59	31	39	47	52	142	197	259	439	284	150	69
1843	5013	Intermittent	31	30	35	31	19	40	70	98	128	136	149	76
		Typhoid	2										2	
		Remittent	1			1		9	40	75	49	12	8	10
		Catarrhal	1							1				
		Bilious	1			1	15	3	37	5	2	2	3	2
		Typhus						3	6					
		Congestive						3	17	4				
		Gastric						1	1	1				4
		Continued						1						
		Yellow							32	188	365	351	111	15
		Cephalic												
		Total 1843	36	30	35	33	34	60	203	372	544	501	273	107

FEVER STATISTICS, CHARITY HOSPITAL—Continued.

Year.	Total Admissions.	FEVERS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Fevers.
1844	5846	Intermittent	66	49	41	32	44	75	176	258	255	261	216	116	1589
		Remittent	2	4	2	1	4	24	30	47	67	55	5	3	244
		Yellow	2	2	....	....	....	1	1	1	68	52	25	...	152
		Typhoid	6	....	1	3	....	3	10	12	11	8	6	20	80
		Simple	3	6	3	....	....	....	....	....	....	....	....	....	12
		Gastric	1	....	....	....	2	1	....	....	5	2	....	....	11
		Typhus	....	4	....	....	....	....	....	..	....	....	....	....	4
		Bilious	....	....	2	4	2	....	1	....	....	3	....	1	13
		Inflammatory	....	....	1	....	....	..	2	....	2	2	2	2	11
		Congestive	....	....	....	1	7	11	17	14	13	15	....	3	81
		Adynamic	....	....	....	....	....	..	2	....	2	....	....	..	4
		Continued	....	....	....	....	....	2	....	....	....	3	....	....	5
		Eruptive	....	....	....	....	....	....	....	1	....	....	....	....	1
		Total 1844	80	65	50	41	59	117	239	333	423	401	254	145	2207
1845	6136	Intermittent	7	75	57	44	79	112	145	96	279	196	189	124	1403
		Typhoid	7	6	5	2	10	8	11	14	18	20	15	23	139
		Remittent	2	1	....	1	11	17	38	34	33	17	....	....	154
		Congestive	3	....	1	....	1	2	1	4	5	4	....	....	21
		Inflammatory	2	....	..	....	....	....	1	1	....	....	....	....	4
		Yellow	..	1	....	....	....	..	....	....	....	....	....	....	1
		Continued	....	1	...	2	1	1	...	....	....	....	....	....	5
		Nervous	....	..	....	1	....	1	1	....	....	....	....	....	3
		Bilious	....	....	....	1	2	6	1	1	1	2	..	....	14
		Simple	....	....	....	1	....	4	1	1	1	1	....	....	9
		Pernicious	....	....	....	....	2	..	2	....	....	....	..	....	4
		Other fevers	....	....	....	....	....	....	....	....	2	1	2	1	6
		Total 1845	21	84	63	52	106	151	201	151	339	241	206	148	1763
1846	8044	Intermittent	79	58	75	76	85	138	214	227	359	376	310	81	2078
		Typhoid	30	13	7	5	10	12	14	17	5	7	23	52	195
		Remittent	3	3	5	....	7	6	2	9	22	36	7	3	103
		Congestive	....	....	1	....	1	2	4	2	5	9	2	5	31
		Yellow	....	....	....	....	....	....	....	....	29	83	3	2	4	148
		Bilious	....	....	....	1	....	1	....	....	2	....	....	....	....	4
		Pernicious	2	....	....	....	....	....	....	....	9	....	....	....	....	11
		Catarrhal	....	....	....	1	....	....	....	....	..	....	....	....	....	1
		Nervous	1	1	..	....	..	....	....	....	....	1	....	....	....	3
		Scarlet	2	....	2	....	1	2	....	....	....	....	1	....	....	8
		Malignant	....	....	....	....	....	....	2	....	....	....	....	....	....	2
		Larvata	....	..	....	....	....	....	....	....	2	2	1	1	6
		Pernicious intermittent	....	....	....	....	....	....	....	....	....	6	4	1	11
		Gastric hepatic	...	..	....	....	....	....	....	....	....	1	....	....	1
		Ataxic	....	....	....	..	....	....	....	....	....	....	1	....	1
		Total 1846	117	75	90	83	104	161	236	255	433	522	380	147	2603
1847	11,890	Intermittent	144	117	98	153	140	211	223	74	53	258	380	341	2192
		Typhoid	40	21	50	73	66	20	7	2	1	6	60	111	457
		Typhus	...	2	4	107	165	369	57	1	...	4	100	236	1045
		Remittent	4	1	4	9	17	38	69	64	25	12	18	8	269
		Congestive	1	1	1	2	3	12	10	1	...	1	2	2	36
		Yellow	....	....	....	....	....	5	148	1611	777	219	49	2	2811
		Bilious	2	..	....	2	...	4	7	2	1	9	7	8	42
		Pernicious intermittent	1	..	....	....	2	1	....	....	....	1	....	....	5
		Other Fevers	1	....	....	....	3	1	....	1	....	2	6	26	40
		Total 1847	193	142	157	346	396	661	521	1756	857	512	622	734	6897
1848	11,945	Intermittent	187	115	101	72	110	160	219	310	299	334	271	233	2411
		Remittent	5	8	17	14	25	57	101	87	64	68	39	5	490
		Typhus, Typhoid	520	588	267	169	117	28	23	11	9	56	64	30	1882
		Yellow	....	....	....	.	2	2	31	462	597	105	34	1	1234
		Catarrhal	10	....	....	1	...	2	....	....	....	....	....	....	13
		Bilious	22	17	11	14	4	13	32	27	19	6	....	3	173
		Ephemeral	10	5	8	6	4	3	5	14	9	5	....	4	73
		Congestive	2	....	2	2	3	13	8	16	2	1	4	1	54
		Scarlet	....	....	....	2	1	1	1	2	....	....	....	....	7
		Dengue	....	....	....	....	....	....	....	....	5	1	1	....	7
		Puerperal	....	....	....	....	....	....	....	....	....	....	1	....	1
		Continued	1	1	..	....	1	1	1	....	....	....	1	...	6
		Total 1848	757	734	406	280	267	280	421	929	1004	576	420	277	6351

FEVER STATISTICS, CHARITY HOSPITAL--Continued.

Year.	Total Admissions.	FEVERS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1849	15,558	Intermittent	109	114	138	117	69	155	368	592	763	720	360	684
		Typhus		127	193	140	128	65	43	44	49	21	23	58
		Typhoid	79											
		Remittent	5	10	13	14	30	49	72	166	223	116	76	50
		Bilious	6	6	19	9	6	10	39	20	11	3	1	
		Yellow							2	28	374	520	130	6
		Ephemeral	4	8	18	18	6	2	7	8	7	1	2	1
		Congestive					1	4	2	6	8	8	4	6
		Puerperal						1		2		1		
		Scarlet											1	
		Cerebral	1				1				1			
		Continued	1					6	6	1	2	2	1	1
		Total, 1849	205	265	381	298	241	292	539	867	1438	1392	598	806
1850	18,676	Intermittent												
		Remittent												
		Bilious												
		Congestive												
		Congestive Intermittent												
		Typhus												
		Congestive Remittent												
		Malignant Intermittent												
		Continued												
		Ephemeral												
		Malignant												
		Puerperal												
		Scarlet												
		Ataxic												
		Yellow												
		Dengue												
		Mesenterica												
		Total, 1850												

Tables 1841-1849, embrace those consolidated from records of Charity Hospital by Dr. Fenner.

It is thus made evident that paroxysmal fevers prevail every year in every month of the year in New Orleans, thus presenting a marked contrast to the prevalence of yellow fever, which is shut up to much narrower limits.

It appears that the cause of yellow fever, requires for its generation propagation a higher degree of heat, and that the conditions of its existence are more narrowly defined than those of malarial fever. The cause of the latter disease not only resists successfully a much lower temperature than that of yellow fever, but when once engrafted on the human system, it is far more persistent and indefinite in its duration, and in fact many cases produces such profound alterations in the constitution of the blood and in certain organs as the spleen and liver, as to constitute a condition of the system, which may underlie and modify supervening disease. In this respect, therefore, the prolonged action of the malarial poison resembles that of syphilis, in that it produces radical changes in the blood and arteries.

Yellow fever, on the contrary, acts as a specific well defined disease, affecting as a general rule, the constitution but once, and in the vast majority of cases leaving no recognizable traces of its action.

The preceding proposition will be still further illustrated by the following table, showing the deaths caused by malarial fevers in each month in New Orleans during a period of twelve years, 1869 to 1880, inclusive

TABLE SHOWING DEATHS FROM MALARIAL FEVERS BY MONTHS, DURING THE YEARS 1869 TO 1880, INCLUSIVE.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Death rate per 1000 per annum	Population.
1869	13	8	13	16	25	19	47	60	61	35	27	21	342	1.79	191.000
1870	15	9	20	20	31	50	43	46	90	48	46	17	435	2.26	
1871	7	11	15	15	11	35	40	64	65	45	26	14	348	1.82	
1872	15	20	20	14	31	18	34	46	38	32	11	12	291	1.52	
1873	17	14	20	17	30	25	62	55	91	79	25	11	446	2.33	
1874	11	12	12	16	24	24	67	125	50	79	36	32	488	2.32	210.000
1875	10	8	14	19	15	26	39	63	100	55	18	16	383	1.82	
1876	15	14	13	19	20	23	55	38	83	56	41	24	401	1.91	
1877	22	20	12	23	18	47	41	61	79	40	29	17	409	1.95	
1878	10	7	16	23	16	26	47	177	229	163	55	8	773	3.68	
1879	5	3	11	8	13	16	33	30	19	32	20	12	202	0 96	
1880	10	13	18	14	26	32	26	30	79	39	32	19	336	1.55	216.000
Total	150	139	184	204	257	341	534	795	984	703	366	203	4854	....	.....
Average	12.5	11.6	15.3	17.0	21.4	28.4	44.5	66.2	82.0	58.6	30.5	16.9	4.04	1.99	202.500

During the entire 12 years, embracing 144 months, deaths occurred from malarial fever in every individual month.

STATISTICS OF YELLOW FEVER IN CHARITY HOSPTAL OF NEW ORLEANS. DURING PERIOD OF 57 YEARS.

YEAR.	Admissions.	Discharges.	Deaths.	Per cent of Mortality.	Date of First Case.	Date of Last Case.
	Yellow Fever.	Yellow Fever.	Yellow Fever.			
1822	337	98	239	70.92	September 3.	December 21.
1823	1	.....	1	100.00	September 11.	.....
1824	167	59	108	64.67	August 4.	November 13.
1825	99	40	59	59.45	June 23.	December 19.
1826	24	19	5	20.83	May 18.	November 18.
Total 5 years.	628	216	412	65.63		
1827	372	263	109	29.30	July 17.	December 5.
1828	290	160	130	44.83	June 19.	December 10.
1829	435	220	215	49.42	May 23.	November 29.
1830	265	139	117	45.72	July 24.	November 29.
1831	3	1	2	66.67	June 9.	October 7.
Total 5 years.	1356	783	573	42.23		
1832	26	8	18	69.23	August 15.	October 25.
1833	422	212	210	49.77	July 17.	November 17.
1834	150	55	95	63 33	August 28.	November 22.
1835	505	221	248	56.24	August 24.	November 27.
1836	6	1	5	83.33	August 24	October 25.
Total 5 years.	1109	497	612	55.18		
1837	998	556	442	44.29	July 13	November 28.
1838	24	5	19	77.25	August 25.	November 1.
1839	1086	634	452	41.62	July 23.	November 17.
1840	3	.....	3	100.00	July 9.	November 17.
1841	1114	520	593	53.14	August 2.	December 8.
Total 5 years.	3225	1715	1510	43.72		
1842	425	214	211	49.65	August 4.	November 26.
1843	1096	609	487	44.44	July 10.	December 31.
1844	169	86	83	46.11	September 4.	November 25.
1845	1	1	.....	.....	August 10.	August 10.
1846	146	50	96	65.82	August 29.	December 1.
Total 5 years.	1837	960	877	47.74		
1847	2479	1584	895	46.11	June 29.	December 11.
1848	1234	814	420	34.26	June 7.	December 2.
1849	1062	517	545	51.66	July 28.	December 4.
1850	10	6	4	40.00	August 23.	November 16.
1851	7	5	2	28.57	August 1.	October 9.
Total 5 years.	4792	2926	1866	39.06		
1852	496	157	339	68.74	August 20.	November 29.
1853	3317	1327	1890	58 71	May 21.	November 23.
1854	2743	1510	1233	44.91	July 2.	December 1.
1855	2198	1099	1099	50.00	June 3.	December 11.
1856	98	47	51	52 04	August 10.	November 3.
Total 5 years.	8752	4140	4612	52.69		
1857	235	80	155	65.91	September 17.	December 18.
1858	2727	1345	1382	50.67	June 16.	December 23.
1859	107	23	64	78.50	August 29.	November 29.
1860	2	1	.....	.....	August 12.	November 4.
1861	.....	.....	.....	.....	.....	.....
Total 5 years.	3071	1450	1621	52.78		
1862	.....	.....	.....	.....	.....	.....
1863	.....	.....	.....	.....	.....	.....
1864	2	1	1	50.00	.....	.....
1865	.....	.....	.....	.....	.....	.....
1866	130	95	35	28.92	August 27.	November 14.
Total 5 years.	132	96	36	27.27		

STATISTICS OF YELLOW FEVER IN CHARITY HOSPITAL—Continued.

YEAR.	Admissions. Yellow Fever.	Discharges. Yellow Fever.	Deaths. Yellow Fever.	Per cent of Mortality.	Date of First Case.	Date of Last Case.
1867	1493	821	672	45 01	June 9.	October 22.
1868	8	3	5	62.50	October 5.	October 22.
1869	4	3	1	33.33		
1870	518	256	262	50.75		
1871	29	9	20	68.96		
Total 5 years.	2052	1092	960	46.36		
1872	11	3	8	72.72		
1873	118	43	75	63.55		
1874	9	3	6	66.66		
1875	16	5	11	68.75		
1876	3	1	2	66.66		
Total 5 years.	157	55	102	64.96		
1877						
1878	817	406	411	50.44	July 18.	November.
10 years, 1822–1831	1984	999	985	49.64		
10 years, 1832–1841	4334	2212	2122	48 75		
10 years, 1842–1851	6629	3886	2743	41.47		
10 years, 1852–1861	11823	5590	6233	52.71		
10 years, 1862–1871	2184	1188	996	45.57		
Total in 50 years.	26974	13875	13079	48.55		

From the preceding table consolidated from the yearly reports of the Charity Hospital, it will be seen that during a period of fifty years, 1822-1871, 26,974 cases of yellow fever were treated in the Charity Hospital, with a mortality of 48.55 per cent., and if we include the five years, extending to 1876 inclusive, 27,130 cases of yellow fever were admitted, 13,181 of which proved fatal, giving a mortality of 48.65 per cent. for the entire period.

During the entire period of fifty-five years, extending from 1822-1876 inclusive, only four years can be specified in which no case of yellow fever was entered upon the Hospital Register, namely, 1861, 1862, 1863 and 1865. In 1864, only two cases were entered. It is important to note that the period 1861-1865, embraces the American Civil War, when the relations of New Orleans to commerce and emigration were altered, and the city was, to a great extent subject to a strict military government and rigid quarantine.

A progressive increase in the number of cases of yellow fever, admitted into the Charity Hospital, is observed from 1822 to 1858. Thus, if periods of ten years be compared, the following results will be obtained:

Admissions during ten years 1822-1831, 1984; 1832-1841, 4334; 1842-1851, 6629; 1852-1861, 11,823.

This increase should be referred not so much to a relative increase of the disease, as to the growth of New Orleans, and the progressive increase of emigration from European countries and Northern and Northwestern States, during the forty years, extending from 1822-1861 inclusive.

The truth of this proposition can be shown by the statistics of Charity Hospital and the march of population:

TOTAL ADMISSIONS AND DEATHS IN CHARITY HOSPITAL DURING 55 YEARS—182[illegible] INCLUSIVE.

Year.	Admissions.	Discharged.	Deaths.	Remaining.	Year.	Admissions.	Discharged.	Deaths.	Rem
1822	1,689	1,116	57[illegible]	82	1850	18,476	15,989	1,884	
1823	1,266	983	283	78	1851	18,319	17,074	1,869	
1824				100	1852	18,031	15,057	2,098	
1825	1,267	989	218	70	1853	13,759	10,733	3 164	
1826	1,408	1,212	196	125	1854	13,192	9,976	2,702	
1827	1,853	1,549	304	90	1855	12,192	9,701	2,391	
1828	2,390	1,989	401	94	1856	9,432	8,398	974	
1829	2,548	2,065	483	138	1857	8,903	7,913	1,017	
1830	2,790	2,366	424	148	1858	11,337	8,923	2,290	
1831	3,558	3,149	409	116	1859	12,775	11,257	1,321	
1832	2,271	1,703	568	309	1860	14,000	12,357	1,390	
1833	3,731	2,617	1,114	169	1861	8,665	7,918	798	
1834	5,797	4,745	1,052	262	1862	6,016	5,532	719	
1835	6,225	4,999	1,226	265	1863				
1836	4,748	4,163	585	222	1864	4,861	3,999	812	
1837	6,060	4,640	1,420	228	1865	6,466	5,880	669	
1838	4,573	3,890	683	271	1866	9,329	8,108	1,122	
1839	4,566	3,611	955	239	1867	8,612	7,260	1,438	
1840	4,989	4,370	619	267	1868	4,981	4,365	490	
1841	4,249	3,093	1,156	314	1869	6,177	5,327	784	
1842	4,404	3,516	760		1870	7,837	6,764	1,118	
1843	5,013	3,672	1,041		1871	6,651	5,730	891	
1844	5,846	5,059	820		1872	5,541	4,846	825	
1845	6,136	5,446	563	283	1873	5,090	4,124	993	
1846	8,044	7,074	855	401	1874	5,231	4,360	860	
1847	11,406	9,369	2,037	427	1875	4,845	4 121	753	
1848	11,945	10,010	1,897	828	1876	5,690	4 780	742	
1849	15,558	12,133	2,741	609					

NATIONALITIES OF PATIENTS ADMITTED TO THE CHARITY HOSPITAL, NE[illegible] LEANS FOR THE PERIODS SPECIFIED.

YEARS.	Foreigners.	Natives of the United States.	Natives of Louisiana.	Unkn
12 Years.				
1830–1841	37,543	16,247	512	
1842	3,449	921	34	
1843	3,921	1,033	59	
1844	4,530	1,203	113	
1845	4,786	1,231	119	
1846	6,151	1,628	145	12
1847	10,171	1,507	53	15
1848	10,280	1,468	111	8
1849	13,634	1,635	147	14
1850	16,598	1,510	264	10
1851	16,503	1,485	241	19
1852	16,144	1,561	248	17
1853	12,333	1,078	228	12
1854	11,606	1,250	252	8
1855	10,861	960	328	4
1856	8,045	1,020	349	1
1857	7,326	1,183	394	
1858	9,568	1,391	360	1
1859	10,753	1,637	377	
1864	2,966	1,167	624	
1868	3,422	1,014	524	
1869	3,480	1,841	837	
1870	4,907	2,163	723	
1871	4,101	1,847	671	
1872	3,255	1,622	631	
1873	3,038	1,363	672	
1874	3,013	1,437	764	
1875	2,634	1,332	866	
1876	2,991	1,669	1,015	
Total	248,011	55,403	11,761	1,4

Total admissions of Foreigners, Natives of the United States and of Louisiana (1830-1876 i[illegible] 316,659.

A comparison of the preceding tables will illustrate the relations foreign population to the disease, and especially to yellow fever, t[illegible] in the Charity Hospital of New Orleans.

During the period of forty years 1830--1876, 316,659 patients were admitted to the Charity Hospital, and of this number 248,011 were foreigners ; 5,403 natives of the United States, outside of Louisiana, and 11,761 were natives of Louisiana.

PRACTICAL OBSERVATIONS ON YELLOW FEVER IN NEW ORLEANS, LA.

Sanitary measures and reforms must be based on facts and not on speculation.

The first step is to view calmly and dispassionately the magnitude and the nature of the evils under which the people labor ; and then when the public mind is sufficiently enlightened, those charged with the sanitary improvement of the city, may be either aroused, or compelled to do their duty in the execution and perfection and maintenance of works absolutely essential to the comfort and health of the entire people.

Rome in former times, before she had perfected her wonderful system of sewers, and drained the Pontine marshes, conquered surrounding nations with the sword and destroyed her citizens by fevers ; New Orleans on the other hand, has conquered her territory from the domain of the Father of Waters, and by the progressive improvement of her system of drainage, we may hope, finally to banish those fevers which have destroyed her citizens.

The statistics of our great Charity Hospital furnish data for the comprehension of the magnitude of the sufferings, pecuniary expenses, and mortality inflicted upon the citizens of New Orleans by fevers.

At great expense of time and labor I have been able to consolidate the records of the Charity Hospital during a period extending from 1841 to the present time, and now present some of the more important results. (See Tables A and B).

During eighteen years preceding the civil war, 1842--1860, the total admissions into the Charity Hospital of New Orleans 207,356 ; total deaths, 29,614; the per cent of deaths, 14.2.

During sixteen years following the civil war, 1864--1881, total admissions, 96,857; total deaths, 14.104 ; per cent, 14.5.

Total admissions during 34 years, 304,213 ; total deaths, 43,718 ; per cent. 14.3.

Yellow Fever—1842-1860 (18 years) : cases, 16,073; deaths, 8,081. Per cent. of mortality in yellow fever, in the Charity Hospital, for the period specified, 50.2.

1864-1881 (16 years) : cases, 3,160 ; deaths, 1,560. Per cent. of mortality, 49.3.

It is evident, therefore, that during the 34 years specified, that there were treated in the wards of the Charity Hospital 19,233 cases of yellow fever, with 9,667 deaths, giving a mortality of 50.2 per cent.

It would appear from the preceding statement that yellow fever has greatly diminished during the past thirty-four years. This fact will be still more evident by extending the review over a longer period, from 1821 to 1881.

CASES OF YELLOW FEVER FOR TEN YEARS, AS FOLLOWS:

YEARS.	CASES.	DEATHS.	PER CENT.
1822 to 1831	1,984	985	49.64
1832 to 1841	4,334	2.122	48.75
1842 to 1851	6,614	2,743	41.47
1852 to 1861	11,823	6,233	52.71
1862 to 1871	2,183	996	45.57
1872 to 1881	817	411	50.44

Total cases of yellow fever treated in the Charity Hospital during t past sixty years, 26,958; deaths, 13,079. per cent of mortality, 48. During the last twenty years, 1862 to 1881, the cases numbered 3000, a the deaths 1407; during the middle series of years, 1842 to 1861, the ca numbered 18,437. and the deaths 8976; during the first series of twe years, 1822 to 1841, the cases numbered 6318, and the deaths 3107.

The remarkable decrease in the number of cases of yellow fever occu ing in the city of New Orleans, as evidenced by the statistics of Charity Hospital, during the past twenty years, is rendered still more parent when we reflect that during the period of the sixty years specifi the population of the city of New Orleans had increased from 41,35 (27,242, parish of Orleans 14,175) in 1820, to 216,359 in 1880.

This marked diminution of yellow fever cases in New Orleans may referred to several causes, as—

1. The progressive improvement of the sanitary condition of the city the extension of the drainage system, the prompt removal of garbage fœcal matters, and the more general use of disinfectants.

2. The marked diminution in the rate of increase amongst the w population from the influx of emigrants from foreign countries.

This proposition will command special consideration and amplifica

3. The substitution of iron steamships for wooden sailing vessels, the displacement of smaller vessels by those of greater size and incre speed; the modern revolution in naval architecture, consequent upon introduction of steam as the motor and iron as the material, has bee tended with great gain, by rendering voyages much shorter, and by mitting of better ventilation and more perfect sanitary arrangement.

The stay of ships in infected ports has, in like manner, been shorten

The mechanical appliances for loading and unloading ships are v improved, and the number of seamen necessary to conduct the same am of commerce greatly diminished; although, from the increase of man tures, and the increase of traffic, the total number of men now engag commercial pursuits is greater than at any former period in the w history.

4. The improvement in the sanitary condition of ships, and the incr attention to the hygiene and comforts of seamen in the matter of sle quarters, clothing and food.

Here is a field worthy of the labors of the wisest and best sanita and humanitarians.

The interest awakened in our day amongst the masses with referer public and private sanitation, has pervaded even the great mercantil commercial world, and one of the grandest achievements of modern tary science will be the development and perfection of such a sa system, including ventilation and disinfection, and personal cleanl that the importation of contagious and infectious diseases by ships

one country to another will be rendered impossible. As President of the Board of Health of Louisiana, I have endeavored to advance this important work by every means at my command.

We have stated that the second proposition needed further consideration and amplification, and we shall now endeavor to throw light upon this important subject.

During ten years inclusive, 1817-1826, the population of the city proper, of New Orleans increased from 24,196 to 40,766; actual increase 16,570 or 64 per cent. The deaths from all causes numbered 17,500, and the deaths from yellow fever 2734; or one death from yellow fever in 6.7 deaths from all causes.

During the ten years, 1827-1836, the population increased from 40,766 to 65,600; actual increase 24,834, or 69 per cent. Deaths from all causes, 32,-382; deaths from yellow fever, 3042; one death from yellow fever in 10.6 deaths from all causes.

During the ten years, 1837-1846, the population increased from 65,600 to 102,070; actual increase 36,470, or 55.6 per cent. Deaths from yellow fever 4453; one death from yellow fever in 8.4 deaths from all causes.

During the ten years, 1847-1856, the population increased from 102.070 to 161,404; actual increase 59,334, or 58 per cent. Deaths from all cause 92,-018; deaths from yellow fever 18,043; one death from yellow fever to 5.1 deaths from all causes.

During the ten years 1857-1866, the population increased from 161,404 to 178,042; actual increase 16,638 or 10.3 per cent; total deaths from yellow fever 5367, or one death from yellow fever in 14.14 deaths from all causes.

During the ten years 1867-1876, the population increased from 178,042 to 204.424; actual increase 26,382 or 14.8 per cent; deaths from all causes 69,886; deaths from yellow fever 4133 or one death from yellow fever in 16.9 deaths from all causes.

During the entire period extending from 1817 to 1878 inclusive, sixty-two years, the population of New Orleans increased from 24,196 to 210,000; actual increase in sixty-two years, 175,804 or 727 per cent. The total deaths during this period amounted to 342,480, and the total deaths from yellow fever 41,829; or one death from yellow fever in 8.2 deaths from all causes.

If the increase of the population of New Orleans be estimated at the regular intervals of the United States census, we obtain the following figures: In the ten years, 1820-1830 New Orleans gained 19,134 inhabitants or 70 per cent; in ten years 1830-1840, increase, 55,883, or 120 per cent; in ten years 1840-1850 inclusive 14,192, or 13 per cent; in ten years 1850-1860, increase 52,295, or 46 per cent; in ten years 1860-1870, increase 22,748 or 13 per cent.

There are no accurate statistics to show the actual population in 1878, but judging from the disturbed state of politics from 1870 to 1878, and the contraction of business, and the loss of commerce, the increase of taxes and public debts, the estimate of 210,000 as the population of New Orleans in 1878, appear to me very near the true figures.

It is worthy of note that during the ten years 1860-1870, embracing the entire period of the civil war, and still more disastrous period of so-called "reconstruction," there was an actual decrease in the white population of New Orleans from 144,586, to 140,923, whilst there was an increase of colored population (negro race) from 27,074 to 50,456.

Whilst therefore the whites actually decreased 3,673, the colored population increased 23,382 or 85 per cent.

Whilst the negro population of New Orleans had nearly doubled itself in ten years, 1860-1870; on the contrary during the ten years 1850-1860

(according to the United States census), the white population had increased from 59,459 to 144,596, showing a gain of 55,137; and the negro population from 26,916 to 27,074, showing a gain of only 158.

A complete revolution was therefore made in the population of New Orleans by the results of the civil war. The loss of 3673 white citizens during the period embracing the civil war (1860-1870) did not represent the actual destruction occasioned amongst the whites by the casualties of the war, for it will be admitted on all hands that a large immigration set in to New Orleans from all parts of the Southern States after the close of the war, and this city probably contained a larger white population in 1866 and 1867, than at any previous or subsequent time.

The prevalence, as an epidimic, of yellow fever in 1867, was mainly due to two causes:

1. The absence of yellow fever, as an epidemic, since 1858, and consequently all children under eight years of age were liable to the disease; and,

2. To the influx of unacclimated strangers into the city.

The immunity of New Orleans from yellow fever in 1863, 1864, and 1865, can no more justly be referred to the sanitary measures of the United States government during that period, than to those of the city and State and Confederate governments in 1859, 1860, 1861 and 1862, when New Orleans enjoyed an almost equal immunity from yellow fever, the deaths from this disease being in these years respectively: 1859, 92; 1860, 15; 1861, none; 1862, 2. We have no data to show the actual number of deaths amongst the Federal troops on land and water in and around New Orleans, 1863 to 1865; but that yellow fever was present is well established. The comparison of the preceding facts with the statistics of yellow fever in the Charity Hospital, leads still more strongly to the conclusion that epidimics of yellow fever occur most frequently, and prevail to the greatest extent, in those seasons in which a large number of passengers from foreign countries arrived in this city.

Thus far, the following are the number of passengers from foreign countries who have arrived in New Orleans and paid a specific tax to the Charity Hospital: 1842, 30,832; 1843, 24,930; 1844, 19,788; 1845, 29,97-; 1846, 34,540; 1847, 41,052; 1848, 40,962; 1849, 43,398; 1850, 38,423; 1851, 36,376; 1852, 45,335; 1853, 34,870.

A progressive increase in the number of cases of yellow fever admitted into the Charity Hospital is observed from 1822 to 1858. Thus, if a period of ten years be compared, the following results will be obtained: Admission in ten years, from 1822-1831, 1984; 1832-1841, 4334; 1842-1851, 6614; 1852-1861, 11,823.

This increase should be referred not so much to a relative increase of the disease, as to the growth of New Orleans and the progressive increase of immigration from European countries, and Northern and Western States during the forty years from 1822 to 1861, inclusive. Thus during a period of forty years, from 1830 to 1876, 317,286 patients were admitted to the Charity Hospital, and of this number 238,753 were foreigners; 44,11 natives of the United States, outside of Louisiana; and 11,760 were native of Louisiana.

During a period of thirty years, 1830-1859: total admissions, 260,372; foreigners, 203,946; natives of the United States, 29,664; natives of Louisiana, 4334.

During a period of ten years, 1864-1868-1876: total admissions, 56,91- foreigners, 34,807; natives of the United States, 14,455; natives of Louisiana, 7426.

It is clearly shown by these statistics that the effects of the American civil war, and the subsequent destructive and hostile legislation during the following ten years, were to diminish emigration from foreign countries and at the same time to impoverish the natives of Louisiana, who, in thirty years preceding the war, furnished only 4332 patients to the Charity Hospital, out of a total of 260,372; and who in ten years, including 1864, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875 and 1876, furnished 7426 patients, out of a total of 56,914 admissions.

From the preceding facts, we draw the following conclusions:

1. The increase in the number and extent of the epidemics of yellow fever in New Orleans has been intimately associated with the accumulation of unacclimated human beings in the city, and with the increase of commerce and in consequent crowding, and the accumulation of filth and crowd-poison in ships, and in badly constructed and badly drained and policed habitations.

Yellow fever is not necessarily the outcome from the causes and conditions stated in Proposition No. 1, for it has been frequently absent as an epidemic even in the city, when all these conditions existed; and in like manner it is unknown in and around the Asiatic countries, where all the supposed factors for the generation of yellow fever exist.

3. Periods of great movements of population are periods of great danger to the maritime cities of the coast of the Gulf of Mexico; consequently, eternal vigilance should be exercised by those charged with the execution of sanitary and quarantine laws.

4. As the poison of yellow fever can be conveyed by ships and railroad cars, the vigilance of the health authorities of New Orleans should never be abated; but it should be especially manifested at such time as the city becomes filled with unacclimated material. When the city is crowded with strangers and immigrants from regions in which yellow fever usually prevails, the introduction of the disease by ships may act as the match to the magazine.

5. The stationary condition of the population of New Orleans argues well for the future exemption of this city from sweeping epidemics.

The population of the city is evidently sufficient for all the needs of commerce, but it needs application and direction to the more useful branches of manufacture and labor, as ship building, cotton, jute, paper and other branches of manufacturing industry. The idle and dissolute might thus be utilized to the suppression of vice and crime, and the advancement of the city and State.

6. By its geographical position; by its peculiar topography; situated upon a low, alluvial, badly drained, swampy plain; surrounded by large bodies of water; by the exposure of an extensive river bank, putrid, stagnant canals and marshes; by defective drainage, sewerage and police, and by its hot and moist climate, New Orleans has been peculiarly exposed to the ravages of yellow fever.

Whilst it is the wish of every true patriot to claim all excellencies of position and health for the land of his choice and love, at the same time future advancement of sanitary science, and the highest interests of humanity, demand that all causes of disease, whether existing in the soil or climate, should be honestly stated and fully weighed.

In sanitary science, as well as in disease and the science of medicine the proper remedies or preventives can only be fully appreciated after the comprehension of all dangers and difficulties.

7. It follows, from proposition No. 6, that one of the most essential measures for the improvement of the sanitary condition of New Orleans, is the

thorough excavation and cleaning of the drainage canals. Provided th city continues in its present state of good health, the city authorities shou commence the excavation and cleansing of the drainage canals of Ne Orleans before the end of October, and the work should be continu during the cold months of winter until completion.

It is not just that the filth of the gutters in the front and of the more elev ted portions of the city should be perpetually pushed and washed ba upon the citizens of the rear, or swamp portions of the city, to choke the drainage canals with foul black mud. This pernicious practice has be persued for years, until the drainage canals are literally choked up with filt

I have agitated this question of the thorough excavation and cleansi of the drainage canals of New Orleans, and I shall continue to agitate it long as they remain in their present condition; and whilst the hot summ months are unsuited for this work, it might have been undertaken la winter, and it should certainly be executed as soon as the weather becon sufficiently cool.

8. Every system which would look exclusively to the defense of New leans from pestilence by quarantine, is vicious and destructive at once commerce and the best interests of the city, in that it leads to the negl of those sanitary measures, which will best promote the removal and dication of the causes of disease, and the removal of those physical c ditions which promote the rapid spread of destructive epidemics.

Quarantine, to be effective, must be efficient and thorough.

Justice to the commercial community demands that rigid rules as the length of quarantine should be fixed by legislative enactment.

According to the existing laws of Louisiana, the funds derived f quarantine should legally be devoted to its maintenance, and should no diverted to pay either the Sanitary Police or Sanitary Inspectors, the s ries of whom, according to the legislative acts of 1870 and 1877, are dire chargeable to the city of New Orleans.

An advance in the quarantine system of Louisiana will be effected by thorough equipment of the Rigolets and Atchafalaya stations, and the struction of a capacious and well-ventilated floating hospital for the ha of New Orleans, to which all contagious and infectious diseases occur amongst the shipping could be immediately transferred. It is not right cases of small-pox, typhus and yellow fever, should be carried from shipping into the heart of a great city, as has been the case in fo times. There is no remedy for this evil but the establishment and thor equipment of a floating hospital, and the employment of a competent sician at a liberal salary to take charge of it, and to be on duty at all t

This measure should be supplemented by the appointment or em ment of a competent, experienced physician, whose sole duty shall b continuous inspection of the shipping and the prompt removal of all i ious diseases to the floating hospital. To the accomplishment of important results, the Board of Health of the State of Louisiana sh devote its energies and those resources which the State has allotted t maintenance of quarantine and the protection of the State from fo pestilence.

9. The results of the quarantine and sanitary operations of 188 1881, demonstrate that it may be possible to institute at once a jus enlightened system of quarantine and hygienic rules among the agen in the vehicles of commerce, and an enlarged and progressive syst sanitation, embracing thorough drainage, abundant water supply, and efficient removal of all excrementitious matters, and the proper tion and construction of well ventilated and thoroughly policed hou

RELATIONS OF FEVERS TO DRAINAGE—MALARIAL FEVERS.

SANITARY MEASURES RECOMMENDED BY THE PRESIDENT OF THE BOARD OF HEALTH.

The relations of fevers, and more especially of malarial fevers to drainage; the great injury inflicted upon New Orleans by the systematic neglect of the drainage, as well as the sanitary measures best adapted to overcome the difficulties and evils of soil and climate, will be illustrated by the following letters addressed to his honor the Mayor of New Orleans, November 14 and December 9, 1881.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
State House, New Orleans, November 14, 1881.

His Honor Joseph A. Shakspeare, Mayor of the city of New Orleans:

Dear Sir— In accordance with section 4 of Act No. 80, "An act to reorganize and render more efficient the Board of Health of the State of Louisiana," approved April 20, 1877 (a copy of which marked A is hereunto annexed), and in accordance with a resolution of Col. I. N. Marks, adopted unanimously by the Board of Health at the regular meeting held November 10, 1881, as follows:

"*Resolved*, That the estimate and statement of the President of the Board as to the receipts and expenditures of the Board of Health for 1881, and the sums necessary for the conduct of the sanitary affairs of the city of New Orleans for 1882, be accepted and endorsed, and that the President be requested to transmit the same to the honorable, the Mayor and Administrators of the city of New Orleans."

I have the honor to transmit to his honor, the Mayor, and to the honorable the Administrators of the city of New Orleans, the following:

1. Statement of sums necessary for the maintenance of the quarantine and sanitary operations of the Board of Health during the year 1882.

2. Estimated and actual receipts and expenditures of the Board of Health for the year 1881.

The said estimates in accordance with the requirements of section 4, Act 80, of the General Assembly of Louisiana, approved April 20, 1877, have been sworn to and subscribed before Oscar Drouet, Esq., notary public, on the twelfth day of November, 1881.

The attention of your honor, and of the honorable the Administrators of the city of New Orleans, is most earnestly and respectfully requested and directed to "the estimate of expenditures for the conduct of the sanitary affairs of the city of New Orleans for 1882, under the direction of the Board of Health."

It will be seen that the sum which the Board of Health requires for the conduct of the sanitary affairs of the city of New Orleans, including the pay of Sanitary Inspectors, and the cost of disinfectants for the entire city, is $16,422 50 (sixteen thousand four hundred and twenty-two dollars and fifty cents).

This would be at the average rate of about five cents (or more accurately, 5.2) per inhabitant.

The cost to the city of an epidemic of yellow fever has been estimated at not less than $15,000,000 (fifteen millions of dollars).

The estimate which the board now submits for the conduct of the sanitary affairs of the city of New Orleans, is not more than the thousandth part of the cost of a single epidemic of yellow fever.

In the conduct of the sanitary affairs of New Orleans, the organic acts of the Legislature of Louisiana (see sec. 1 of an act supplementary to an

act entitled "An act relative to quarantine," approved March 18, 1858; also, sec. 2 of an act to amend "An act to establish quarantine for the protection of the State," approved March 16, 1870; also, sec. 5 of Act No. 80, "To reorganize and render more efficient the Board of Health of the State of Louisiana," approved April 20, 1877; all hereunto annexed, and marked respectively B. C. and D,) have made the honorable Mayor and Administrators of the city of New Orleans responsible not merely for the prompt supply of the necessary funds for the payment of the Sanitary Inspectors and for the purchase of the necessary disinfectants, but also for the detail of the necessary police for the proper and regular execution of the orders of the Board of Health.

Accordingly, the Board of Health respectfully urge the honorable Mayor and Administrators of the city of New Orleans to detail, for the execution of the sanitary orders of the Board of Health for the preservation of the city from pestilence and infectious diseases, the seventeen policemen and eight carts with their drivers and teams.

Upon the action of the honorable the Mayor and Administrators of the city of New Orleans, in providing the necessary means for the payment of the Sanitary Inspectors and in furnishing the necessary police, and the necessary disinfectants and the carts for their distribution, depends in large measure the sanitary condition of New Orleans, and the health and commercial prosperity of her citizens.

New Orleans has no system of sewers; the excrement from the 210,000 inhabitants, and from the strangers that constantly crowd her streets must be removed by hard manual labor.

It is horrible to contemplate the effects of hoarding up this vast accumulations of human filth in this damp, hot, semi-tropical climate.

In the present condition of New Orleans, this only method of dealing with this gigantic evil, which is a constant menace to the health and comfort of the people, is to clean the privies by mechanical means—by well devised odorless apparatus—and to keep them continually disinfected by cheap and reliable disinfectants, accessible to all at the lowest prices.

The constant and systematic removal of the human and animal excrement, as well as the maintenance of a good sanitary condition of private premises, must be based upon *systematic house to house inspection*. Thorough inspection and thorough attention to domestic sanitation require intelligent, faithful and honest sanitary policemen, subject to rigid discipline by the legal authorities.

The prompt fulfilment of these important requisitions of the Board of Health by the honorable Mayor and City Council, will establish the full confidence in surrounding communities, and will promote the highest and best interests of the city and State, in protecting foreign and internal commerce from unnecessary quarantine, and above all in protecting the living and promoting the health of the people.

With great respect and high esteem, I have the honor to remain, your obedient servant,

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

RELATIONS OF FEVERS, AND ESPECIALLY MALARIAL FEVERS, TO DRAINAGE—CLEANLINESS AND DRAINAGE OF PARAMOUNT IMPORTANCE TO THE CITY OF NEW ORLEANS.

Hon. Joseph A. Shakspeare, Mayor of the city of New Orleans:

Dear Sir—The following facts, illustrating the importance of the immediate attention to the cleaning out of the drainage canals of this gr

city, which holds within its borders one quarter of a million of people, and represents a large portion of the wealth and intelligence of the State of Louisiana, and commercially occupies the gateway of the Mississippi Valley, are respectfully submitted.

DRAINAGE CANALS OF NEW ORLEANS.

From the following tabulated statement, it will be seen that the drainage canals within the populated portion of the city, bounded by Metairie Ridge, extend 118,915 feet, or 22.5 miles in length:

NAME OF CANALS.	FEET.	
	Width.	Length.
FIRST DRAINAGE SECTION.		
Galvez, from New to Old Canals	25	5100
Broad, from New to Old Canals	20	4500
Hagan, from New Canal to Draining Machine	60	4200
Carrolton, from New Canal to Orleans street	20	5800
Claiborne, from Canal street, to Canal Carondelet	6	1820
Carondelet, from Claiborne street to Draining Machine	20	6750
Poydras, from Galvez to Broad street	20	2150
Tail race from Draining Machine to Metairie Road	25	6100
SECOND DRAINAGE SECTION.		
Dublin, from Tenth street to New Canal	40	5815
Claiborne, from Dublin street to New Canal	40	15850
Tail race from Dublin street to Upper Line Canal	25	4850
Tail race of Melpomene Draining Machine	25	10450
Camp, from Felicity Road to Clio street	15	2600
Melpomene, from Camp to Dryades street	15	2300
Melpomene, from Dryades street to Draining Machine	25	3800
THIRD DRAINING SECTION.		
Claiborne, from Canal Carondelet to Elysian Fields	15	6400
Broad, from Canal Carondelet to London Avenue	25	8480
London Avenue, From Broad street to Draining Machine	40	2400
Orleans, from Claiborne street to Bayou St. John	25	6450
St. Bernard, from Claiborne to Broad street	25	4300
Claiborne, from Elysian Fields to Poland street	8	8800
Total lengths of canals		118915
Or 22.52 miles.		

Outside of these limits, the length of the canals amounts to 12.5 miles more, making a total of about 35 miles.

An inspection of the canals reveals the following important facts:

1. The various sections of the drainage canals of New Orleans are uniform neither in breadth nor depth. Such variations induce marked deviations in the currents and in the deposits contained in these canals, and promote the accumulation of filth at the bottom and the constant existence of foul and stagnant water.

A moment's consideration will show that the drainage canals should be uniform in depth; and without such uniformity the entire system is imperfect, and a constant menace to the public health.

The Claiborne canal, in the upper districts, which was originally seven feet in depth, is said to have been dug out several years ago to the depth of fourteen feet, and now acts as a reservoir of the foul, stinking waters of the more shallow canals.

2. Examination and measurement shows that there is a mud deposit in all these canals, varying in depth from four to eight feet. Fermentation and the evolution of foul gases is constantly going on in this immense mass of filth, accumulated from the gutters and open sewers and from the streets of this city.

Every known or unknown combination and product of the putrefaction of vegetable and animal matter can be found in these foul reservoirs, which should more truly be termed "cloaca."

3. The drainage canals of New Orleans, unless thoroughly excavated and graded upon mechanical principles, and kept constantly flushed with fresh water, become nothing more nor less than receptacles of putrefying animal and vegetable matter of the most deleterious character to the health of the citizens of New Orleans.

4. The drainage machines do not fulfill their capacities, as there is a necessity during the warm and hot months of spring, summer and autumn to keep a layer of two or three inches of water upon the foul deposits of the canals, to prevent the rapid evolution of the foul gases resulting from the direct action of the sun.

5. It is not just perpetually to wash the filth of the front and more elevated portion of the city back upon the unfortunate inhabitants of the rear or swamp portions of the city, who, in virtue of the declination of the plane upon which New Orleans is built toward the lake, are perpetually exposed to this nuisance.

THE REMEDY.

The immediate and thorough excavation of the drainage canals.

The proper grading of the drainage canals.

The constant supply of fresh water to the drainage canals after the thorough cleaning.

THE TIME.

Now is the time for the inauguration and rapid prosecution of this work.

Work should be, if possible, commenced by large bodies of men upon all the canals under the direction and control of the constituted authorities, namely the honorable Mayor and Administrators.

The warm months of spring and the hot months of summer and autumn are manifestly improper for such excavations, but December, January and February are well adapted to this work. The offensive mud should be disinfected if necessary with quick-lime and copperas, and if practicable should be removed out of the habitable limits.

If the funds of the city are inadequate let the plan of operations be fully explained, and the tax-payers of the city will without doubt countenance this most important of all sanitary works for the protection of their health, the improvement of their property and the enlargement of the commerce of New Orleans by establishing its reputation for health upon a firm basis.

SHIP CANAL CIRCUMVALLATING THE CITY OF NEW ORLEANS.

This scheme, originally advocated several years ago by Prof. Fontaine has been revived by certain professional journalists, and is without doubt worthy of the consideration of the National Government, and sufficiently grave in its nature to require for its proper execution the national resources.

Whatever may be done in the future, it is evident that the dangers and the needs of the present are absolute, and cannot with safety be neglected.

The digging of a canal extending in the form of a bow entirely around the city of New Orleans, from above Carrollton to below the present limits of the parish of Orleans, sixteen miles in length, three hundred feet in width, and sixty feet in depth, will require years for its completion, and will demand millions for its execution.

Whatever system of sewerage or of drainage may in the future be adopted, the storm-waters and surface drainage of New Orleans must be provided for, and the surrounding great canal will facilitate the speedy evacuation of the drainage canals on both sides, if the proper machin

be used during the stages of high water; but it can under no circumstances abolish the uniform operations of nature with regard to rainfall and the periodic elevations or depressions of the Mississippi river.

The annual rainfall of New Orleans varies from forty-two to seventy-two inches—that is, from three and a half to six feet. In a wet year, the drainage canals must remove from the fifty-five square miles of this city a volume of water equal to that contained by a lake fifty-five square miles in extent and six feet in depth. This water is storm water, thrown from the heavens above, and does not include the vast quantities of water used by manufactories, for household purposes, for the extinguishment of fires, for the watering of the streets, and for the flushing of the gutters. Under any system of drainage, these waters must have the fullest possible exit out of the limits of the city. In this hot, moist climate, stagnant water loaded with exuviæ of man and animal, means putrefication, disease and death.

DIFFICULTY OF ESTABLISHING A CORRECT SYSTEM OF DRAINAGE IN THE AREA OCCUPIED BY THE CITY OF NEW ORLEANS.

In the city of New Orleans, bounded by the Mississippi River, which has truly been compared to an inland sea, on the one side, and on the other by extended marshes, lakes, swamps and lagoons, and in high water lying far below the line of the surrounding waters, the question of drainage, sewage and sanitation have been of the most difficult and complicated character, and from her earliest history sanitary measures have engaged the earnest and intelligent care of her rulers and medical faculty.

In the year 1727 the land on which New Orleans stands, not being protected by an adequate levee, was subject to annual inundations, and was a fearful quagmire, presenting no better aspect than a vast sink or sewer, and Gov. Perrier announced his intention to cut a canal from New Orleans to Bayou St. John, in order to open a communication with the sea through the lakes.

Gov. Perrier, in 1727, mentions the arrangements which he had made with the inhabitants, in relation to the negroes which were to execute this work, which was actually begun, but to which subsequent events put a stop.

Thus it is to be seen that the plan of the canal which now bears the name of "Carondelet," did not originate with the Spanish government.

On the ninth October, 1796, Baron de Carondelet completed the canal which carries off the waters of the city and its environs into one of the branches of Bayou St. John, which relieved the ditches surrounding the ramparts and the stagnant pools within and around the city, of the putrid waters which produced those epidemics which were so fatal to its prosperity.

Thus "drainage," the great sanitary problem of New Orleans, engaged the attention of its governors for sixty years before the practical and valuable experiment of Baron Carondelet. The drainage of the city was still further improved by the labors of the "Canal and Banking Company," and subsequently to the civil war by the Mexican Gulf Company. That New Orleans has been rendered more salubrious by these labors will be demonstrated by the following statistics:

TOTAL NUMBER OF CASES AND DEATHS OF THE VARIOUS FORMS OF FEVER TREAT IN THE CHARITY HOSPITAL DURING A PERIOD OF THIRTY-FOUR YEARS.

DISEASES.	Eighteen years preceding the civil war—1846 to 1860.			Sixteen years following the civil war—1864 to 1880.			Total for thirty-four years—1842 to 18		
	Cases.	Deaths.	Per ct	Cases.	Deaths.	Per ct	Cases.	Deaths.	P
Yellow Fever	16,073	8,081	50.2	3,160	1,568	49.6	19,233	9,667	
Typhus Fever	7,220	1,301	18.0	2	2	100.0	7,222	1 303	
Typhoid Fever	3,144	983	31.2	377	180	47.7	3,521	1,163	
Dengue Fever	481	.....	.....	155	.....	.....	636	.....	
Nervous Fever	50	13	26.0	1	.....	.....	51	13	
Adynamic, or Ataxic Fever	27	4	14.8	.....	.....	.....	27	4	
Ephemeral Fever	560	.....	.....	3	.....	.....	563	.....	
Continued Fever	1,020	75	7.3	70	13	16.4	1,099	88	
Catarrhal Fever	97	.....	0.0	19	1	5.2	111	1	
Gastric Fever	111	3	2.7	.....	.....	.....	113	3	
Remittent Fever	13,157	266	2.0	2,204	145	6 5	15,361	311	
Intermittent Fever	53,789	53	0.01	20,881	75	0.3	75,670	128	
Congestive Fever	952	584	50 9	266	214	80.4	1,218	699	
Pernicious Fever	346	221	63.0	132	99	75.0	478	320	
Malarial Fever	.....	.....	.....	6,251	636	10 1	6,251	636	
Malarial Poisoning	.....	.....	.....	431	50	11.6	431	50	
Malarial Cachexia	5	1	20.0	90	7	7.7	95	8	
Typho-malarial Fever	.....	.....	.....	117	66	56.4	117	66	
Other Fevers	120	15	12.5	15	5	33.3	135	20	
Total from all diseases	207,356	29,614	14.2	96,857	14,104	14.5	304,213	43.718	

It will be observed that during the period of thirty four years, 132 cases, with 15,480 deaths, of the various forms of fever, were treated in Charity Hospital.

If the cost of treatment of each case to the State be placed at the figure of $20, then Louisiana expended during these thirty-four years, 646,700 for the treatment of fevers alone—a sum sufficient to have t oughly drained and sewered the whole territory.

DEATHS FROM THE VARIOUS FORMS OF FEVER IN THE CITY OF NEW ORL DURING A PERIOD OF THIRTY-FOUR YEARS.

DISEASES.	Nineteen years preceding the civil war 1844 to 1865 Number of deaths.	Fifteen years following the civil war, 1866 to 1880. Number of deaths.	Total thirty-fo years, 1844 t
Small-pox and varioloid	1,856	3,870	5,726
Measles	760	829	1,589
Scarlatina	1,575	491	2,066
Dengue	6	15	21
Typhus fever	1,220	102	1,422
Cerebro-spinal fever	135	237	371
Enteric, or typhoid fever	2,686	1,034	3,720
Simple continued fever	189	223	407
Yellow fever	20,348	8,393	28.739
Gastric fever	3	16	19
MALARIAL FEVERS:			
Intermittent fever	454	467	921
Remittent fever	503	796	1,299
Congestive fever	2,871	3,466	6,337
Typho-malarial fever	8	185	93
Malarial (unclassified)	2.338	1,409	3,747
Total	.....	.....	56,478

Deaths from cholera, cholera morbus and cholera infantum in New leans during a period of thirty-four years, 1844 to 1880: Cholera, 11 cholera morbus, 889; cholera infantum, 2408. Total, 15,144.

Deaths from enteritis, diarrhœa and dysentery in New Orleans du period of thirty-four years, 1844 to 1880: Enteritis, 6915; diarrhœa, dysentery, 7097. Total, 22,301.

Deaths from phthisis-pulmonalis in New Orleans during thirt years, 1844 to 1880, 24,071.

Total deaths in New Orleans during thirty-four years, 1844 to 1880, from ll causes, 242,426.

From the preceding statistics we gather the following general (results) nclusions:

1. Fevers appear to be decreasing in frequency and fatality in New rleans, and such decrease should be referred chiefly to increased drainage nd to improved sanitary methods.

2. While fevers of all varieties destroyed in the city of New Orleans 3,478 citizens in thirty-four years, yellow fever destroyed only one-half of is number, namely, 28,739; and nothwithstanding the fact that only bout one-half of the mortality from fever in New Orleans during the eriod specified was due to yellow fever, the attention of the entire Missis ppi Valley is directed to this disease, and it is sought to impose immense rdens upon the citizens of the United States for the support of a cum- rous and expensive system of railroad and steamboat inspection, whilst e equally destructive and far more prevalent forms of fevers are ignored.

If these fevers be divided into separate groups, the mortality will stand us:

Total deaths from small-pox, measles and scarlet fever during thirty-four years	9,381
Total deaths from dengue, typhus fever, cerebro-spinal fever and simple continued fever	5,942
Total deaths from yellow fever	28,739
Total deaths from the various forms of malarial fever	12,416

The deaths from the various forms of malarial fever, indigenous to the il and common to all parts of the great Valley of the Mississippi, were ry nearly half as numerous as those caused by yellow fever; congestive ver alone caused 6337 deaths.

It is well established by the records of medicine extending back over 00 years, that drainage and agriculture are the great and only absolute d certain means of destroying the cause of malarial fever.

If the value of a citizen to the State be rated at $1000, then the city of ew Orleans has lost during thirty-four years $56,478,000 by fevers alone. ther diseases, however, whose existence and propagation are largely de- ndent upon defective drainage have been busy in the work of destruc- on.

Thus during the thirty-four years specified phthisis pulmonalis destroyed early as many citizens as yellow fever, namely: 24,071; enteritis, dysentery d diarrhœa 22,301; and cholera, cholera morbus and cholera infantum ,144.

Total from phthisis pulmonalis and bowel affections, 61,616.

These diseases, which are common to the entire valley, count 61,616 aths, exceeding those by fevers 5138.

Without doubt, a large proportion of the deaths from phthisis pulmonalis d bowel diseases are preventable and directly referable to defective ainage.

Fevers. bowel affections and phthisis pulmonalis alone caused in New leans 118,094 deaths in thirty-four years, out of a total of deaths from l causes of 242,426.

We may therefore affirm that nearly one-half of the deaths in New Or- ns during the past thirty-four years (118,095) were caused by preventa- e diseases, the remedy for the diminution of the same being effective ainage.

From these diseases New Orleans has lost in thirty-four years, according reliable data $118,094,000 (one hundred and eighteen million ninety- ir thousand dollars).

In conclusion, extended and valuable experience has convinced yo Honor, that no city in the world has suffered more obliquy than New O leans in relation to health, and more especially in regard to its epidemi of yellow fever, and however devoid of sanitary laws and hygienic regul tions, and however filthy and neglected the towns and cities situated with the valley of the Mississippi and its tributaries have been in past tim they have ever sought to lay their own devastating epidemics at the door this great commercial centre.

The rapidly advancing millions of the great valley look with increasi interest upon the sanitary condition and quarantine laws and regulatio of New Orleans.

It will not be beyond the bounds of truth to affirm that, but for t American scourge, New Orleans, even at this day, after the ravages civil war and the ruthless plundering of her hostile rulers, would h exceeded every other city of America as well in the magnitude of her ports as her exports. The opening of the great state of Texas to railro trade and traffic, and the vast movement of grain and cattle inaugurat inspire all good and true citizens with renewed hopes of a brighter futu and solemnly warn those who are charged with the sanitary and quarant interests of this great city and fertile State that the welfare of milli may be involved in their action.

If, by the application of all the facts known to science, the sanitary c dition of New Orleans can be so improved as to exclude yellow fever, i not unreasonable to believe, when we consider the extent and extraordin fertility of the basins of the Mississippi and Missouri, that New Orle is destined to become the great emporium, not of America only, but of world.

Even at this present day she holds commercial relations with al every maritime nation and large city of the globe; and, as the representa and port of this mighty valley, her health and prosperity are not me national but cosmopolitan.

With great respect, I have the honor to remain your obedient serv

JOSEPH JONES, M. D.,
President Board of Health, State of Lousisian

The first and most solemn duty of the State and Municipal governm is to secure the people from overflow, and to enlarge and perfect the d age of New Orleans.

Such important works should be conducted upon a general and prac plan, and the highest engineering talents should be employed.

During the past four years I have advocated the view that the pr tion from overflow and the drainage of New Orleans should be confid General G. T. Beauregard. It is well known that the distinguished neering services of General Beauregard protected Charleston and Sava from the powerful fleets and armies of the North, and that his defen those and other Confederate towns, opened a new chapter in the histo defensive warfare. At my earnest request General Beauregard, perm the reproduction in this connection of his valuable report on the drai of the First Drainage District.

NEW ORLEANS, MARCH 2, 1

Dr. Jos. Jones, New Orleans.

My Dear Doctor :—I have found at last, my report and estimate of the "proposed s of drainage for the First Drainage District of New Orleans," made in 1858, and w had promised you; but I could not find it until this morning. As it is the only copy left, I beg you to be careful with it. I am, yours very truly,

G. T. BEAUREGAR

REPORT ON PROPOSED SYSTEM OF DRAINAGE FOR FIRST DRAINAGE DISTRICT, NEW ORLEANS—BY MAJOR G. T. BEAUREGARD, CHIEF ENGINEER. NEW ORLEANS, DEC. 26, 1858.

NEW ORLEANS, December 26, 1858.

To the Board of Commissioners of the First Draining District, New Orleans:

Gentlemen—I have the honor herewith, to submit for your approval the following report and estimate, relative to the best method of draining the First Draining District of this city, as defined by the Legislative Act of March 18, 1858. On this important subject a very elaborate treatise might be written, but I have thought it best to confine myself to the leading points embraced in the investigation, in order to make my report as concise as practicable.

Two systems offer themselves to our consideration for attaining an object so desirable and important to the health and prosperity of our city.

1. The system of *Colmates*, adopted principally in Italy, which consists in successive overflows from the waters of any sedimentary stream contiguous to the land to be drained, by which operation its soil is gradually raised until sufficiently elevated to carry off naturally by means of surface ditches, the rain water which may fall upen it.

2. The system of *Polders*, adopted in Holland, or where no sediment bearing streams are at hand, and which consists in dividing into sections, by means of canals and levees, the land to be drained, and removing the waters therefrom artificially with "turbines," or screw pumps, water wheels or suction pumps, set in motion by the wind or by steam.

It is evident that when circumstances will favor it, the first of these two systems is to be preferred, on account of its economy, and healthiness to the locality thus reclaimed, and is the one best adapted generally, to reclaim the swamp lands contiguous to the Mississippi River; but after mature consideration, I have concluded, that it cannot be applied to those in rear of the First Draining District, on account of the great cost and long time it would require to derive any material benefit from the deposit; hence we are constrained to the best application of the second or Holland system.

By examining the topographical map of the environs of this city, made by E. H. Springbett and L. Pilié, in 1839, it will be seen that Bayou St. John is the natural outlet to the lake, of the waters of the whole of the first part of the Third Draining Districts, said bayou occupying nearly the central line between the new canal on one side, and Esplaade street, Bayou Sauvage or Gentilly-ridge and Pontchartrain railroad embankment on the other, the area thus enclosed draining naturally towards Bayou St. John; hence it is a matter of great surprise, that when the charter of the Navigation Company was about expiring, advantage was not at once taken of this natural and economical method of draining perfectly the whole of said area, by reserving the Old Basin, canal and bayou, entirely for draining purposes, as by the establishment of a judicious system of flood or sluice-gates, and several large draining wheels at the mouth of the bayou; the water in the latter could always have been kept, even during the heaviest rains, several feet below the general surface of the contiguous swamps, which could then have been made to drain at once into this natural reservoir, merely by the construction of a few secondary canals cut perpendicular to the general direction of the bayou, intersected at right angels by smaller canals or ditches, so as to carry the waters of the intermediate areas into the larger canals, and from thence into the bayou or main reservoir.

The average level of the swamp lands referred to, being about 2′ 6″ above ordinary low water, the bayou could generally be drained to that level, by the sluices of flood-gates at its mouth, and the additional quantity of water could be taken off by the draining engines, thus obtaining a great economy of fuel whenever the tides in the lake would permit. By having a covered drain in Basin or Claiborne street, the waters of that part of the city lying between either of said streets and the river, could be drained at once into the Old Basin or canal, and would be thereby cut off from the lower levels, in the rear of said streets, without having as now to flow over one mile before reaching the draining engine, at the lower extremity of Hagan Avenue.

Such a system of drainage would have been economical, perfect in itself, and easily carried into execution, so that what is now swamp-land of an impassable character, would have become in less than four or five years from the starting of the project, high lands, as available for cultivation and building purposes, as any to be found along the banks of the river. We would soon after have seen magnificient summer residences and gardens of all dimensions, wharves and landings, constructed along the lake shore, from the New Canal to the Pontchartrain railroad, and the whole area from the lake to the river intersected with shelled avenues and street railroads, and the active commerce of the city would soon have extended from the river to the lake. The health of the city would also have been materially improved, not only from the perfect drainage of its site, but by the lake breezes, which would have swept over it, unaccompanied by the miasmas,

which are constantly generated in the swamps intervening between it and the lake; and to which may, no doubt, be greatly attributed, the yearly epidemics which decimate our population, and spread terror and dismay amongst our non-acclimated citizens.

I would respectfully recommend that a strong effort should be made to carry into operation this system of drainage, which I consider far superior in every respect to any other I could suggest.

Accompanying this report, however, is a sketch showing the other plan proposed by me, and which I guarantee, if carried faithfully into practice, will also drain thoroughly the whole of the First Draining District, which I have divided off into *six* separate sections—each one provided with its requisite canals, ditches, and draining-engines—for it is evident that the latter can only perform a certain amount of work in a given time, to which must be proportioned, the area to be drained, and the canals and ditches required to conduct the water freely and continuously to the draining-wheel, the latter being situated in as central a position as circumstances will permit; and it is equally evident that two engines, of a certain power each, placed in one locallity, will not do the work as quickly, effectually and economically, as if the area to be drained was subdivided into two equal parts, and these engines placed in the most favorable position to drain each section separately; for, in the first place, larger and more costly canals would be required to convey the waters to the engines, or the land contiguous to them would be drained almost immediately, and they would then have to be stopped or worked to disadvantage, while the lands more remote would still remain for several hours under water. Again, our swamp-lands being almost on a dead level, they require to be cut up into as many small sections as practicable, by small ditches leading into larger ones, these into small canals, the latter into larger ones, and finally, these last, into the main canal or reservoir, conducting the waters directly to the draining-engine.

The whole area of the First Draining District is 5,518.3 acres, but the part actually to be drained will measure about 5,430¼ acres, which have been divided into six *polders* or sections, as follows:

1.	From the river to Galvez street Canal, about	833¼ acres
2.	" Galvez street Canal to the Metairie Bayou	1,385 "
3.	" Metairie Bayou to half the distance to the lake, included between Bayou St. John and the discharge Canal, along Orleans street, about	803 "
4.	" The latter to the New Canal, and corresponding to Section 3, about	803 "
5.	" Section 4, to Lake Pontchartrain, and from the New Canal to the discharge Canal in Orleans street, about	803 "
6.	" Section 3, to the lake, and from the discharge Canal on Orleans street, to Bayou St. John, about	803 "
	Total	5,430¼ "

An important principle in draining is, that with a sufficiency of canals, the power of the engine and the proportions of the wheel should be such as to carry off the rain and filtration waters as fast as they fall or accumulate, under the most unfavorable circumstances, upon the area to be drained. Thus when the soil is already saturated, and six inches of rain fall in twenty-four hours, (which occasionally occurs in this latitude), 9 pounds of water per acre from that source alone, or about 1,000 pounds (16 cubic feet, 7½ gallons, about) from all sources, would have to be removed per minute; and if we take six feet as the ordinary lift to which that water has to be raised, we will then obtain the followings results for each of the sections to be drained:

NO. OF SECTIONS.	Area in Square Acres.	No. of gallons of water to be drained per minute.	No. of cubic feet of water to be drained per minute.	No. of pounds of water to be drained per minute.	No. of Horse power to raise the water six feet high.	No. of Horse power of engine required.	Diameter of cylind'r in inches.	Strokes per minute.	Diameter of pinion.	Diameter of spur-wheel.	Diameter of draining wheel.	Pressure of steam.	Area of buckets of wheel.	Revolutions of
									ft. in.				FEET.	
1	833.25	99.990	13.332	833.250	151.50	202.00	19.65	60	2 23-5	19 ft	36 ft	100	35.65	
2	1.385.00	166.200	22 160	1385.000	251.82	335.76	25.32	....	.....	....	....	....	59.25	..
3	835.00	96.360	12.848	803.000	146.00	194.66	19.30	....	.....	....	....	....	34.40	..
4	803.00	96.360	12.848	803.000	146.00	194.66	19.30	....	.....	....	....	....	34.40	..
5	803.00	96.360	12 848	803.000	146.00	194.66	19.30	....	.....	....	....	....	34.40	..
6	803.00	96.360	12.848	803.000	146.00	194.66	19.30	....	.....	....	....	....	34.40	..
	5.430.25	651.630	86.884	5.430.250	987.32	1316.40								

The above engine and wheels are calculated to raise 39,097,800 gallons of water, six feet high per hour, and should be so arranged as to drive out the water under ordinary circumstances, and to *lift* it over the height of the levees in severe and long continued northerly storms, which backs up the waters of the lake several feet outside of those levees.

The last four sections are not exactly of the same area as represented in the above division, but the difference between them being slight, has been neglected without effecting the general results of this Report. Whenever the work comes to be executed, their precise areas, etc., can be determined with acurracy.

The first two sections comprise now, but *one*, and that very imperfectly drained by two wheels of different sizes, placed at the intersection of Bayou St. John and Hagan avenue, one of 35 feet 4 inches, diameter, 6 feet 2 inches wide, and the other 29 feet 3 inches, diameter, 4 feet 5 inches wide.

The cubic contents of the draining canals at present in use in these two sections, exclusive of gutters and small ditches, are as follows:

For the first Section, 473,400 cubic feet, or 568 1-7 cubic feet to one acre.

For the second Section 2,907,000 cubic feet, or 2,099 cubic feet to one acre, which is indeed a very small proportion, altogether too small for perfect drainage; then the two engines and wheels are placed together in one locality, which exposes them to destruction by an explosion of boilers or by fire, as has lately taken place. But as they are being repaired and put in good order, they can at present be allowed to remain where they are, for the sake of economy. Another great objection to the present system is, that a part of the area drained, having a fall from the river ridge to Rampart street of 5 feet 9 inches, and from thence to Claiborne street of 2 feet 8 inches, the rest being nearly level, it follows, that the waters of the higher lands are precipitated at once upon the lower levels, where they remain until removed by the above draining engines, which being very far off (nearly 1½ mile) from the foot of the slope, and not provided with a sufficiency of "conduits" or canals, perform their work very slowly; indeed, I am informed, as should have been anticipated) that these lands remain sometimes thus submerged several days, to the injury of residents who live upon them, and to the detriment of the health of the city. (*See note at bottom of page.*) Whereas, if another draining engine of proper power had been erected near the intersection of Galvez street canal and Old Canal, as I now propose, increasing the dimensions of the former, so as to answer the purposes of a reservoir, and a discharge canal had been made along the old canal, falling into the head of Bayou St. John, near the site of the present draining engine, the waters of the higher lands would have been removed at once, or as fast as they would have accumulated into said reservoir, and the low lands below the latter, being separated from it by small levee or an elevated street, would have been drained at once of their own waters, by the engine at the head of Bayou St. John, particularly if section 2 had been better provided with small canals, leading into the existing ones, as marked in dotted lines on the accompanying sketch. We would then have had for each of these two sections the following cubical contents of canalling exclusive of gutters and small ditches.

For first Section, 1,037,400 cubic feet, or 1,245 cubic feet to one acre.

For second Section, 5,038,000 cubic feet or 3,637½ cubic feet to one acre.

But I am informed that the present Carondelet Navigation Company objects to the city draining into Bayou St. John, because the waters thrown into it, containing a great deal of sedimentary matter, tend to obstruct the navigation by muddy deposits immediately below the site of each engine. This is probably so, but it is an obstacle which can be easily removed at little cost to the city. This company, however, does not seem to be aware of the immense injury which would result to said bayou by excluding from it entirely all the waters of the first and third draining districts, which naturally flow into it and maintain its present depth; for it is a natural law of all streams in alluvial soils, that their regimen or cross-section is proportioned to the quantity of water which passes through them. If we divert or exclude from them any portion of said water, their depth and width will gradually accommodate themselves to this diminution. Thus, before the construction of the new canal, which cut off the head-waters of Bayou Metairie, the latter was several feet deeper than at present—being now nearly dry in many places. Bayou Gentilly is filling up gradually from a similar cause; Bayou Terre-aux-Bœufs was once navigable for skiffs and canoes to the river, whose waters then passed through it, but it is now nearly dry in many places for several miles from its source. The same fate, no doubt, awaits Bayou St. John, should the navigation company persists in its

Note on Plantation Drainage.—From the above remarks it follows, that where practicable, when plantations composed of high and low lands have to be drained, the true system is to separate these by a canal and levee, allowing the waters of the high lands to run off along the side lines to the swamp, as to a grand reservoir, and levee-in, the low lands to be drained *separately* and *alone* by the draining engine, otherwise all the waters of the high lands which ought to run off naturally, are precipitated upon the low lands, and must be got rid of artificially, while the low lands are kept much longer under water than they would otherwise remain. Moreover, the engine and wheel have in consequence to be made much stronger, and the canals much larger than are actually necessary.

suicidal policy, and instead of only having a few deposits here and there to contend with, they will have to keep open the whole bayou from its source to its mouth, particularly the latter. I would, on the contrary, advise them by all means to concentrate into that bayou all the waters they could conveniently, and at little expense, get to flow into it.

By a map, in my possession, I find that the area of the other four sections has a slight inclination from the new canal to Bayou St. John, and from the Metairie ridge and lake shore, towards the centre of said area. Along the first of these lines, the ground averages less than 2 feet below the high-water mark of the storm of 1831; along the second, it is about 4 feet 6 inches below it, and along the third it is above said mark, and along the fourth about 2 feet 6 inches below it. In the interior of this area, the ground is generally about 4 feet 6 inches below said level, requiring to be protected from similar storms by levees along the lines referred to, from 1 foot to 18 inches above the highest waters of that storm. These are the considerations which have guided me in determining the dimensions of the levees estimated for. The one along the lake shore being exposed moreover to the waves of the lake in northerly storms, requires in addition to be protected by a strong plank revetment.

The details of these levees, ditches, canals and reservoirs, are given in the accompanying sketch, intended merely to illustrate my report, without regard to the plans of the city extending in that direction, which will, however, have to be followed in the execution of the work. Should it be found necessary hereafter, the surfaces of these sections can be subdivided still more by the construction of additional main and secondary ditches. But it is probable that when the streets and gutters shall have been constructed in that part of the city, none but the main canals or reservoirs will be required for the perfect drainage of each section.

The canals and reservoirs are made gradually to increase in dimensions as their length increases, so as to produce the maximum effect at a minimum cost. I will also remark that, not designing to have any interior ditches or canals immediately next to the exterior levees, no filtration waters, which are generally so troublesome and expensive, need be apprehended, if said levees are kept in good condition. So soon as any of these levees are finished, I earnestly recommend that Bermuda grass seeds or cuttings should be sown on their crest and slopes to protect them from the effects of the sun, rain and high water of the lake during northerly storms. This grass matting, when thick, as it will soon become, will even prevent weeds and bushes from growing on the levees.

The planting of several rows of sun-flowers (helianthus) along the berms of every canal would, according to Lieut. Maury, U. S. Navy, cause the absorption of the miasmatic gases arising from these canals, when the latter are neglected or not cleaned out, and would remove, if successful, one of the greatest objections to their use in large cities.

The secondary ditches (D) are 4 feet wide at top, 2 feet wide at bottom, and 3 feet deep. The main ditches (C) are 6 feet wide at top, 3 feet wide at bottom, and 4 feet deep. The secondary canals are as follows:

At their beginning,	8	feet	wide at top,	4	feet	wide at bottom,	4	feet deep.
At their lower end,	12	"	" "	6	"	" "	6	" "
Averaging	10	"	" "	5	"	" "	5	" "

The main canals or reservoirs are as follows:

At their beginning, 26 ft. wide at top, 20 ft. wide at bottom, 6 ft. deep.

At their lower end, 36 ft. wide at top, 30 ft. wide at bottom, 6 ft. deep.

Averaging, 31 ft. wide at top, 25 ft. wide at bottom, 6 ft. deep.

They present together, in each section an average cubical content of 2,987,037 cu feet. or 3,718 cubic feet to an acre.

In order to place the draining sections of the last four sections in the most favora locality to do their work advantageously, by diminishing as much as practicable distance the water has to pass over in getting to the draining wheel of each section becomes necessary to construct a central discharge canal along the middle of Orle street (Nelson avenue), to carry off to the lake the discharged waters. Moreover it mi be used hereafter for the same purpose for sections 1 and 2, if necessary.

This canal would thus be situated about half-way between Bayou St. John, its dim sions should be such, also, as to furnish the earth required for the protection levees each side of it, i. e., it should be 36 feet wide at top, 30 feet wide at bottom, and 6 deep, its length from the middle point of the line of separation of sections 3 and 4 to lake would be about 10,250 feet. The foot of the outer slope of those levees must b least 10 feet from the edges of the canal.

The draining engines of sections 3 and 4 ought to be placed near the upper extren of that canal, discharging their waters into it. Those of sections 5 and 6 ought to put, for the same reason, as near to it as practicable, at about the middle dista between the two first sections and the lake. The engines thus placed near each ot two in each locality, will require but one engineer to each set, and can be so arrange to drain the contiguous sections in case of necessity. But they should be put far eno from each other to be beyond the reach of danger, should one of them be destroyed fire or by an explosion of boilers.

The entire separation from each other, or, more properly, isolation of these sections by their levees, enables us to complete the draining arrangements of any one of them independently of the others, and, according to the means at our command, leaving the drainage of the others to be commenced and completed as circumstances will permit.

The Board of Commissioners must decide to which of the sections referred to in this Report the means at present available shall be applied, and the order in which the others shall be undertaken.

By referring to the accompanying detailed estimate, it will be seen that the perfect drainage of the first district, comprising 5,430¼ acres, will cost as follows:

The 1st section,		$42,961.16,	or	$51.56	per acre,	or	$5.16	per lot.
" 2nd	"	37,389.55,	"	26.99	"	"	2.70	"
" 3d	"	111,676.51,	"	139.09	"	"	13.91	"
" 4th	"	111,676.51,	"	139.09	"	"	13.91	"
" 5th	"	116,764.01,	"	145.41	"	"	14.54	"
" 6th	"	116,764.01,	"	145.41	"	"	14.54	"
Total,	"	537,231.75,	"	98.93	"	"	9.89	"

Requiring 1,316 2-5 horse power, at a cost per horse power of $408 11, the horse power being taken at 33,000 lbs. raised one foot high in one minute.

The above estimate may appear large at first sight, but when compared with the immense benefits to be derived from its proper and judicious expenditure, and with the large sums expended on some of the public and private buildings of this city (the St. Charles Hotel for instance, $500,000 ; the St. Louis Hotel, $1,000,000 ; the Municipal Hall, $356,000, etc.), it sinks into insignificance, particularly when it is considered that this sum is to be called for only during a series of years, and to be borne by a whole community who are directly interested in this vitally important improvement, which is to bring, in the opinion of the best informed, health and rapid prosperity to our metropolis, and entitle it, ere long, to the proud appellation of the first city in the Union, not only in commerce, but in population.

Respectfully, your obedient servant,

G. T. BEAUREGARD,

Brevet Major of Engineers and Chief Engineer of First Draining District.

ESTIMATED COST OF DRAINING FIRST DRAINING DISTRICT, NEW ORLEANS.

FIRST SECTION.

DESIGNATION.	Square Feet.	Length Running Feet.	Cubic Yards	Price per Yard	Cost.	Total
For re-excavation of Galvez street canal for purposes of a reservoir	104	4,900	18,874	40c.	$7,549 60	
" re-excavation of Canal street	32	1,700	2,015	..	806 00	
" discharge canal and levee near old canal	90	4,500	15,000	50c.	7,500 00	$15,85
" 202-horse power engine, boiler and wheel					$9,000 00	
" transportation and erection complete					1,200 00	
" foundations					6,500 00	
" building					6,500 00	23,2
Add for contingent and unforeseen expenses 10 per ct.						3,9
Total amount of estimate			35,889			$42,9
That is $51 56 per acre, or $5 16 per lot, assuming ten lots per acre.						
SECOND SECTION.						
For re-excavation of old canals			53,615	40c.	$21,446 00	
" excavation of new canals, B	37½	10,000	13,889	50c.	6,944 50	
" " " ditches, C	18	16,800	11,200	..	5,600 00	33,9
" 335.76-horse power engine, boiler and wheel					12,500 00	
" transportation and erection complete					1,400 00	
" foundations					8,500 00	
" building					7,500 00	20,4
						63,4
Deduct draining engine already in use						29,5
						33,
Add for contingent and unforeseen expenses 10 per ct.						3,
Total amount of estimate			78,704			$37,
That is $26 99 per acre, or $2 70 per lot.						
THIRD SECTION. CANALS AND DITCHES.						
For excavating main canal or reservoir, A	168	4,575	28,467	50c.	$14,233 50	
" " secondary canals, B	37½	20,850	28,958	..	14,479 00	
" " main ditches, C	18	27,300	18,200	..	9,100 00	
" " secondary ditches, D	9	27,800	9,266	..	4,633 00	
" " discharge canal	100	6,950	25,740	..	12,870 00	$55
			110,631			
LEVEES.						
For Bayou St. John levee	115½	8,335	35,655	40c.	14,262 00	
" middle levee between sections 3 and 4	82½	4,550	13,903	..	5,561 20	
" separation between sections 3 and 4	82½	6,950	21,236	15c.	3,185 40	2
			70,794			
" draining engine, building, etc., complete, as per section 1						2
Add for contingent and unforeseen expenses 10 per ct.						1
Total amount of estimate			181,425			$11
That is $139 09 per acre, or $13 91 per lot.						
FOURTH SECTION.						
The same as for section 3			181,425			$11
That is $139 09 per acre, or $13 91 per lot.						

FIFTH SECTION.					
same as sections 3 and 4		181,425			$111,676 51
l for revetment of Lake Shore levee, running feet..	4,625		$1 00	$4,625 00	
for contingent and unforeseen expenses 10 per ct.				462 50	5,087 50
Total amount of estimate		181,425			$116,764 01
hat is $145 41 per acre, or $14 54 per lot.					
SIXTH SECTION.					
same as for section 5		181,425			$116,764 01
hat is $145 41 per acre, or $14 54 per lot.					

ESTIMATED COST OF DRAINING FIRST DRAINING DISTRICT, NEW ORLEANS.

RECAPITULATION.

DESIGNATION.	Cubic Yards.	Cost.
First Section	35,889	$ 42,961 16
Second "	78,704	37,389 55
Third "	181,425	111,676 51
Fourth "	181,425	111,676 51
Fifth "	181,425	116 764 01
Sixth "	181,425	116,764 01
Total	840,293	$537,231 75
t is, 5.430.25 acres will require for perfect drainage—		
316.40 horse-power, at a total cost of		$537,231 75
Or 4.125 acres will require one horse-power, at cost of		408 11
Or one acre at $98 93, or one lot at		9 89

G. T. BEAUREGARD,
Chief Engineer First Draining District.

VITAL STATISTICS OF NEW ORLEANS, LOUISIANA.

TABLE ILLUSTRATING THE RELATIONS OF THE POPULATION OF NEW ORLEANS T THE TOTAL MORTALITY FROM ALL CAUSES, DURING A PERIOD OF NINETY-FOUR YEARS. COMPILED BY PROF. JOSEPH JONES, M. D.

Year.	Population.	No. of Deaths.	Death Rate per 1000 Inhabitants.	Year.	Population.	No. of Deaths.	Death Rate p 1000 Inhabitan
1787....	5,284	338	63.98	1844....	86,632	4620	53.33
1796....	8,756	638	72.86	1845 ..	89,261	2783	31.17
1808....	17,081	773	45.25	1846 ..	102.070	4220	41.34
1810 ..	17,242	963	55.85	1847....	108,699	9043	83 19
1811....	18,235	1239	67.94	1848....	115,503	7407	64.12
1812 ...	19,229	624	32.50	1849 ..	122,511	9862	80.49
1813	20,212	939	46.45	1850....	129.747	7819	60.26
1814....	21,216	926	43.69	1851 ...	138,599	7275	52.48
1815....	22,209	1252	56,36	1852 ...	147.441	8693	58 95
1816....	23,303	651	27.93	1853	154.132	15,287	102.42
1817....	24,196	1772	73.27	1854....	156.556	11,347	72.47
1818....	25,190	1106	43.90	1855....	158,980	10,096	63.50
1819....	26,183	2138	81 65	1856 ...	161,404	5689	35.24
1820....	27,176	1766	64.98	1857....	163,828	5581	34.07
1821 ...	29,441	1165	39.57	1858....	165,450	11,720	70.83
1822....	31,706	2734	86.22	1859 ..	166,500	6849	41.13
1823..	33,971	1662	48.92	1860....	168,670	7341	43.52
1824....	36,236	1748	48.23	1861....	169,907	5772	33.97
1825 ...	38,501	2177	56,54	1862 ...	171,134	6278	36.10
1826....	40.766	1248	30.61	1863....	172,361	7172	41.61
1827	43,031	1057	24.56	1864....	173,588	8498	48.95
1828 .	45,296	1490	32-89	1865....	174,815	7016	40.13
1829....	47,561	2520	52.98	1866 ...	178,042	7754	43.55
1830 ...	49,826	2022	40.58	1867....	181.269	10,096	55.57
1831	52,455	1926	36.71	1868....	184.496	5343	28.96
1832....	55,984	8099	147.01	1869 ...	187,723	5593	29.79
1833....	57,713	4976	86.22	1870....	191,418	6942	36.26
1834....	60,342	3687	61.10	1871 ...	193,412	6059	31.24
1835....	62,971	3873	61.50	1872....	196,406	6588	33.54
1836....	65,600	2734	41 67	1873....	198.900	7995	40.19
1837....	68,229	4807	70.45	1874....	201,394	7193	35.71
1838 ...	70,858	2606	36.77	1875....	203,888	6535	32.05
1839 ...	73.487	3934	53.53	1876....	206,382	6585	32.39
1840....	76.116	2977	39.11	1877....	208,876	7169	34.32
1841 ..	78,745	4549	57.76	1878....	211,371	10.717	50.70
1842 ...	81,374	3375	41.47	1879....	213,865	5122	23.94
1843 ...	84,003	4050	48.21	1880 ..	216,359	5623	25.98

TABLE ILLUSTRATING DEATHS AND DEATH RATE FROM ALL CAUSES AND F YELLOW FEVER, IN THE CITY OF NEW ORLEANS DURING A PERIOD OF SIXTY-F YEARS. COMPILED BY PROF. JOSEPH JONES, M. D.

Year.	Deaths from all causes.	Deaths from Yellow Fever.	Death Rate per 100.		Year.	Deaths from all causes.	Deaths from Yellow Fever.	Death rate per 1	
			from all causes.	from Yellow Fever.				from all causes.	from Y Fe
1817..	1772	823	73.27	3.40	1849...	9862	769	80.49	
1818..	1106	115	43 90	0.40	1850...	7819	107	60.26	
1819..	2138	425	81 65	1.60	1851...	7275	17	52.48	
1820..	1766	400	64 98	1 40	1852...	8693	456	58.95	
1821..	1165	...	39.57	..	1853...	15787	7849	102.42	
1822..	2734	808	86.22	2.50	1854...	11347	2425	72.47	
1823..	1662	1	48.92	0.01	1855..	10096	2670	63.50	
1824 .	1748	108	48.23	0.30	1856...	5689	81	35.24	
1825..	2177	49	56.54	0.10	1857...	5581	200	34.07	
1826..	1248	5	30.61	0.01	1858...	11720	4855	70.83	
1827..	1057	109	24 56	0 20	1859...	6849	92	41 13	
1828..	1490	130	32.89	0.30	1860...	7341	15	43.52	
1829..	2520	900	52.98	1.90	1861...	5772	....	33.97	
1830..	2022	117	40.58	0.20	1862 ..	6278	2	36.10	
1831..	1926	2	36.71	0.01	1863...	7172	2	41.61	
1832..	8099	400	147.01	0.70	1864...	8498	6	48.95	
1833..	4976	1000	86.22	17.30	1865...	7016	1	40.13	
1834..	3687	95	61.10	1.50	1366...	7754	185	43.55	
1835..	3873	284	61.50	4.50	1867...	10096	3107	55.57	
1836..	2734	5	41.67	0.08	1868...	5343	3	28.96	
1837..	4807	1300	70.45	19.00	1869 ..	5593	3	29.79	
1838..	2606	17	36.77	0.20	1870...	6942	588	36.26	
1839.	3934	800	53.53	10.80	1871...	6059	54	31.24	
1840..	2977	3	39.11	0.04	1872...	6588	39	33.54	
1841..	4549	1325	57.76	16.80	1873...	7995	226	40.19	
1842..	3375	211	41.47	2.60	1874 ..	7193	11	35 71	
1843..	4050	487	48.21	5.70	1875...	6535	61	32.05	
1844..	4620	148	53.33	1.70	1876...	6585	42	32.39	
1845..	2783	2	31.17	0.01	1877 .	7193	1	34.32	
1846..	4220	160	41.34	1.50	1878...	10717	4056	50.70	
1847..	9043	2804	83.19	25.80	1879...	5122	19	23 94	
1848..	7407	872	64.12	7.50	1880..	5623	2	25.98	

TABLE F.

…and Mortuary Statistics of New Orleans—Mortality of the White and Black Races in New Orleans, La., During Three Years, 1849, 1850 and 1853, Preceding the Civil War (1861-1865) and During the Period of Slavery. Also, Illustrating Weekly and Daily Mortality by Cholera and Yellow Fever for 1846, 1847, 1851, 1852, 1853, 1854, 1855, 1857, 1858, 1866, 1867, 1878. Also Mortality by Color, Sex, Ages, Nationality; by Zymotic Diseases (Yellow Fever, Typhus and Typhoid Fevers, Measles, Scarlatina, Diphtheria, Whooping Cough and Asiatic Cholera and Small-Pox), and Monthly and Annual Mortality During a Series of Years, 1849-1881 inclusive; Consolidated from Original Reports and Records Collected and Classified by Joseph Jones, M. D., New Orleans, 156 Washington Street, Corner of Camp, Fourth District, January 1, 1882.

NAME OF DISEASE.	1849 W.	1849 B.	1850 W.	1850 B.	1853 W.	1853 B.	Total 3 Years. W.	Total 3 Years. B.	Grand Total W. & B.
GENERAL DISEASES.									
…and Varioloid	78	55	25	12	14	3	117	70	187
…	9	1	46	11	96	27	151	39	190
…	16	6	18	3	103	23	137	32	169
…					2		2		2
…Fever	159	8	191	8	98	5	448	18	466
…Typhoid Fever	158	20	90	13	128	17	376	50	426
…ntinued Fever	9	9	12	4			21	6	27
…Fever	766	3	107		7768	38	8641	41	8682
…Fever	2						2		2
…Fevers: Intermittent Fever	41	5	44	1	34	4	119	10	129
Remittent Fever	17	1	80	5	24	5	121	11	132
Congestive Fever	108	20	124	4	230	31	462	55	517
Malarial Fever (unclassified)	50	5	178	22	84	6	312	39	351
…Malignant or Asiatic	2,623	553	1197	251	482	100	4302	904	5206
…Morbus	74	35	49	20	25	10	148	65	213
…Tetanum	29	11	64	9	46	18	139	38	177
…	22	5	7	6	38	6	67	17	84
…ng Cough	12	1	9	1	14	4	35	6	41
…							2		2
…	6		12	1	14	1	32	2	34
…al Fever	4	1	6	10	11	1	21	12	33
…um	3		5	2	6		14	2	16
…	9	2	11	7	13	11	33	20	53
…	6	4	8	5	10	7	24	16	40
…				1				1	1
…lar Meningitis	445	147	528	146	582	173	1555	366	1921
…Pulmonalis	1		19		103	18	123	18	141
…Mesenterica	7		14				21		21
…l Dropsy	42	22	46	20	61	23	149	65	214
…	1		1				2		2
…			3				3		3
…	1						1		1
…			1				1		1
…er General Diseases not enumerated		1		1				2	2
LOCAL DISEASES.									
Diseases of the Nervous System.									
…tion of the Brain	95	23	83	18	85	26	263	67	330
…ation of the Brain (Encephalitis)	87	30	77	24	115	19	279	73	352
…itis	41	24	34	26	44	17	119	67	186
…x	64	37	82	25	103	30	249	92	341
…oke	19	1	67	1	20	1	106	3	109
…cephalus	16	7	19	2	22	2	57	11	68
…l Meningitis			2	2			2	2	4
…	2		1				3		3
…legia	1	1	1				2	1	3
…	5	2	1				6	2	8
…e (unclassified)			11	6	10	5	21	11	32
…s (unclassified)	42	17	50	16	40	9	132	42	174
…is traumatic			4	1			4	1	5
…a Nascentium	113	59	114	49	117	27	344	135	479
…ophobia					6		6		6
Convulsions	251	63	292	59	404	61	947	183	1130
…Palsy	7	3	11	4	9	4	27	11	38
…lgia	1		2				3		3
Delirium Tremens and Intemperance	71	12	95	9	111	12	277	33	310
Insanity		1	1				1	1	2
All other Diseases of this System	16	5	39	11	9	9	64	25	89
Diseases of the Circulatory System.									
Pericarditis	7	3	10	2	10	9	27	14	41
Dropsy of the Pericardium	1	2					1	2	3
Endo-Carditis	4	1	1	2			5	3	8
Heart Disease (unclassified)	24	14	34	18	25	16	83	48	131
Heart, Enlargement of			1				1		1
Degeneration of Arteries			2				2		2
Aneurism of Heart	1	3	1	1			2	4	6
Aneurism of the Aorta	4	3					4	3	7
All other Diseases of this System	12	6	1				13	6	19
Diseases of the Respiratory System.									
Croup	41	9	29	4	28	7	98	20	118
Laryngitis	16	3	8	3	6		30	6	36
Bronchitis	37	21	29	40	58	36	124	97	221
Bronchitis, chronic			2	1			2	1	3
Asthma	3		7	2	5	2	15	4	19
Abscess of Lungs	1			1			1	1	2
Gangrene of Lungs	2	1	3				5	1	6
Hæmoptysis	4	3					4	3	7
Pleurisy	17	4	8	9	8	2	33	15	48
All other Diseases of this System	25	15	12	3	35	7	72	25	97
Diseases of the Digestive System.									
Hæmatemesis	2						2		2
Stomatitis									
Teething	79	23	109	28	122	21	310	72	382
Thrush	1		4				5		5
Sloughing Sore Throat		1	1				1	1	2
Tonsilitis	2						2		2
Gastritis	22	6	23	9	27	10	72	25	97
Dyspepsia	1						1		1
Enteritis	247	71	213	68	175	55	635	194	829
Dysentery	290	35	304	34	244	26	838	95	933
Ulceration of the Bowels	2	1	8	2			10	3	13
Hæmorrhage of the Bowels	2						2		2
Obstruction of the Bowels	3						3		3
Diarrhœa	223	21	255	35	240	27	718	83	801
Hernia	1	1	1	1			2	2	4
Hepatitis	42	11	26	9	33	5	101	25	126
Abscess of the Liver			6	2			6	2	8
Cirrhosis of the Liver		1			6		6	1	7
Jaundice	2		14	1	4		20	1	21
Peritonitis	7	1	17	2	17	7	41	10	51
Ascites	17	1	37	2	15	5	69	8	77
All other Diseases of this System	21	6	28	6	33	12	82	24	106
Diseases of the Urinary and Generative Organs.									
Albuminuria			2				2		2
Cystitis	5	2	4	1			9	3	12
All other Diseases of this System	6		13	6	3	1	22	7	29
Affections Connected with Parturition.									
Hæmorrhage	8	4	3	5			11	9	20
All others	20	6	26	13	26	9	72	28	100
Diseases of the Organs of Locomotion	6		2				9		9
Diseases of the Cellular and Cutaneous System	8	6	13	1	20	7	41	14	55
Conditions not Necessarily Associated with General or Local Diseases.									
Premature Birth	2	5	28	7			30	12	42
Old Age	16	38	33	41	29	24	78	103	181
Debility	153	29	149	22	128	38	490	89	579
Debility Infantile	48	17	63	13	5	8	116	38	154
All others	1						1		1
Poisoning	5		8	1	4		17	1	18
General Injuries.									
Drowning	76	16	77	20	96	9	249	45	294
Burns and Scalds	19	11	19	11	11	7	49	29	78
All other General Injuries	31	12	25	4	60	17	116	33	149
Local Injuries.									
Wounds									
All other local injuries	19	2	12	4	40	7	71	13	84
Human Parasites	56	14	43	7			99	21	120
Tumors, Non-Malignant	14	4	6	4	15	4	35	12	47
Suicide	5	2	3	2	7	2	15	6	21
Unknown, or Not Stated			9	1	13	1	22	2	24
	564	193	504	139	1605	207	2673	539	3212
Total Deaths	7754	1818	6122	1409	14292	1341	28168	4568	32736
Still-born	220	70	213	75	277	69	710	214	924

VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, ILLUSTRATING WEEKLY AND MONTHLY MORTALITY BY YELLOW FEVER, ASIATIC CHOLERA AND BY ALL CAUSES, 1846, 1847, 1851, 1852, 1853, 1854, 1855, 1857, 1858, 1866, 1867, 1878.

1846.

Week Ending.	Total Deaths.	Deaths from Yellow Fever.
August 30	68	
September 6	70	1
12	74	
19	93	3
26	68	5
October 3	84	21
10	88	12
17	107	39
24	98	22
31	91	14
November 7	84	12
14	82	8
Total	1017	137

1847.

Week Ending.	Total Deaths.	Deaths from Yellow Fever.
July 10	138	5
17	143	6
24	130	16
31	177	17
August 8	263	112
15	353	197
22	432	322
29	461	328
September 5	540	435
12	491	355
19	257	169
26	181	85
October 3	149	61
10	126	44
18	144	53
Total	3985	2241

1851.

Week Ending.	Total Deaths.	Deaths from Cholera.	Deaths from All Fevers.	Deaths from Yellow Fever.
January 4	136	13		
11	131	9		
18	132	6		
25	141	3		
February 1	132	9		
8	142	4		
15	144	7		
22	132	7	24	
March 1	135	8	26	
8	138	5	27	
15	148	2	20	
22	137	2	11	
29	127		20	
April 5	140	7	30	
12	162	23	13	
19	180	19	30	
27	180	35	27	
May 3	157	31	28	
10	171	39	18	
17	167	26	23	
24	137	28	15	
31	155	20	18	
June 7	140	23	11	
14	130	18	16	
21				
28	109	43	36	
July 5	178	34	19	
12	147	16	18	
19	174	43	19	
26	136	20	10	
August 2	103	12	14	
9	113	5	13	
16	175	7	32	4
23	120	2	24	2
30	102		22	2
September 6	127	2	25	1
13	129		25	1
20	127	2	21	2
27	153	1	35	2
October 4	102		21	2
11	124	1	22	
18	103	1	14	
25	104	2	14	
November 1	127	5	14	
8	131	11	18	
15	142	20	19	
22	158	27	20	1
29	149	24	14	
December 6	120	11	13	
13	115	8	14	
20	116	4	10	
27	105		10	
Total	7,008	645	874	17

1852.

Week Ending.	Total Deaths.	Deaths from Cholera.	Deaths from All Fevers.	Deaths from Yellow Fever.
January 2	111	4	9	
9	102		12	
17	103	1	11	
24	119		7	
31	122		16	
February 7	116		15	
14	105		9	
21	110		12	
28	135		29	
March 6	115		21	
13	119		23	
20	120		11	
27	120	1	11	
April 3	129	2	15	
10	127		8	
17	142		20	
24	123		6	
May 1	137		4	
8	138	1	10	
15	161	17	12	
22	171	17	6	
29	342	171	11	
June 5	342	172	26	
12	299	122	22	
19	224	73	11	
26	251	73	26	
July 3	184	40	19	
10	184	[illegible]	26	
17	149	[illegible]	18	
24	150	[illegible]	23	
31	185	[illegible]	35	
August 7	133	[illegible]	28	
14	126	[illegible]	16	
21	135	[illegible]	27	6
28	158	[illegible]	33	2
September 4	148	[illegible]	38	11
11	175	[illegible]	48	15
18	194	[illegible]	35	19
25	209	[illegible]	55	23
October 2	154	[illegible]	46	23
9	174	[illegible]	61	35
16	180	[illegible]	66	50
23	204	[illegible]	75	51
30	246	[illegible]	89	62
November 6	233	[illegible]	96	62
13	231	[illegible]	67	42
20	206	[illegible]	63	37
27	187	[illegible]	51	24
December 4	174	20	39	9
11	136	13	22	1
18	145	19	15	1
25	155	16	30	
Total	8,655	1,30[illegible]	1,481	473

1853.

Week Ending.	Total Deaths.	Deaths from Yellow Fever.	Day Ending.	Total Deaths.	Deaths from Yellow Fever.
May 28	140	1	September 12	55	33
June 4	157	1	13	47	26
11	154	4	14	45	32
18	147	7	15	52	32
25	167	9	16	51	31
July 2	177	25	17	47	24
9	183	59	18	47	28
16	344	204	19	34	21
23	617	435	20	49	27
31	884	704	21	38	16
Day Ending August 1	142	106	22	34	16
2	135	115	23	28	22
3	146	124	24	34	10
4	166	135	25	35	15
5	150	128	26	42	15
6	238	194	27	33	12
7	209	165	28		
8	219	187	29	26	13
9	201	166	30	31	8
10	230	193	October 1	26	7
11	233	192	2	33	11
12	207	180	3	19	8
13	214	170	4	23	4
14	232	191	5	29	10
15	217	187	6	29	11
16	193	163	7	19	4
17	219	191	8	32	10
18	219	188	9	30	4
19	234	203	10	24	5
20	224	184	11	13	5
21	260	230	12	19	8
22	233	219	13	17	2
23	258	220	14	27	9
24	222	188	15	15	5
25	218	186	16	19	4
26	183	151	17	23	4
27	167	155	18	22	5
28	160	131	19	20	9
29	143	120	20	14	2
30	139	114	21	27	10
31	137	95	22	17	2
September 1	119	96	*Week End'g* October 30	193	26
2	133	103	November 6	79	9
3	116	87	13	115	5
4	110	90	20	110	5
5	98	71	27	261	3
6	95	65	December 4	372	
7	70	48	11	255	
8			18	153	
9	64	43	25	91	1
10	80	56	January 1	118	
11	68	43			
Total				13,132	7,930

1854.

Week Ending.	Total Deaths.	Deaths from Yellow Fever.
July 1	329	
8	191	
15	129	
22	159	
29	122	
August 6	212	20
13	207	43
20	258	118
27	386	186
September 3	293	185
10	484	284
17	530	340
24	504	341
October 1	423	269
8	358	207
15	272	134
Total	4,857	2,136

1855.

Week Ending.	Total Deaths.	Deaths from Yellow Fever.
August 4	275	173
11	336	222
18	517	394
25	471	357
October 3	181	70
10	152	40
17	121	24
24	121	15
31	106	11
November 9	94	6
16	70	7
23	64	7
30	69	3
December 8	100	3
15	88	2
22	80	1
29	77	
Total	2,934	1,336

1857.

Week Ending.	Total Deaths.	Fevers.	Cholera.	Yellow Fever.
January 4	85	7		
11	116	4		
18	83	3	1	
25	98	2		
February 2	100	6		
9	95	5		
16	81	4		
23	95	2		
March 1	85	3		
8	79	5		
15	102	8		
22	125	8		
29	107	7		
April 5	112	8		
12	107	6		
19	98	6		
26	99	10	1	
May 3	119	11	2	
10	128	6	3	
17	143	5		
24	117	7	1	
31	116	10	1	
June 7	122	9	1	
14	152	10	2	
22	111	4	2	
29	119	4		1
July 5	105	10	1	
12	94	2		
19	113	5		1
26	117	4		
August 2	111	11	1	
9	98	4		
16	74	3		
23	97	5		
30	102	5		1
September 6	93	9	1	
13	100	12	1	
20	115	9		1
27	103	7	1	7
October 4	122	17		13
11	123	13	1	12
18	135	13	2	36
25	130	12	1	37
November 1	122	8		27
8	119	7		18
15	122	6	1	17
22	109	7		14
29	123	7	1	6
December 6	101	7	1	2
13	92	3		2
20	94	5		2
27	82	4		2
Total	5,596	354	26	199

1858.

Week Ending.	Yellow Fever.
June 27	2
July 4	8
11	9
18	20
25	25
August 1	70
8	140
15	286
22	318
29	402
September 5	449
12	472
19	460
26	444
October 3	380
9	390
19	308
24	260
31	174
November 7	136
14	66
21	17
28	5
December 5	1
12	2
19	
26	2
Total	4,852

1866.

Week Ending.	Total Deaths.	Cholera.	Day Ending.	Total Deaths.	Cholera.
August 5	193	29	September 28	33	3
8			29	25	9
Day Ending August 9	53	18	30	46	22
10	41	24	October 1	31	6
11	48	27	2	34	5
12	59	27	3	34	12
13	63	31	4	45	9
14	62	28	5	18	2
15	43	26	6	25	5
16	68	44	7	44	10
17	50	24	8	28	8
18	54	27	9	31	11
19	57	28	10	28	5
20	45	14	11		
21	48	28	12	31	5
22	42	28	13	20	8
23	50	27	14	41	7
24	49	26	15	31	9
25	39	16	16	27	4
26	37	17	17	36	8
27	24	16	18	29	6
28	37	14	19	33	5
29	36	10	20	27	4
30	34	14	21	22	4
31	33	9	22	23	6
September 1	41	22	23	31	4
2	40	19	24		4
3	37	15	25		6
4	32	18	26		8
5	35	16	27		2
6	49	23	28		5
7	45	17	29		6
8	35	14	30		3
9	37	19	31		3
10	57	29	November 1		4
11	54	32	2		2
12	36	14	3		2
13	40	22	4		3
14	43	16			
15	42	22			
16	48	18			
17	21	10			
18	42	19			
19	30	15			
20	31	11			
21	25	7			
22	37	12			
23	22	7			
24	24	11			
25	41	9			
26	36	7			
27	33	11			
Total				2,094	1,219

1867.

Day Ending.	Cholera.	Yellow Fever.	All Fevers.	Total Deaths.
June 1			5	13
2			5	17
3			3	22
4			1	19
5				16
6				10
7			1	13
8				12
9			1	14
10		1	2	29
11				22
12			2	19
13			2	16
14	1		1	13
15			2	20
16	2		1	20
17			1	15
18			1	16
19			3	19
20				18
21			1	11
22				8
23		1	2	16
24			1	23
25			1	18
26		1	4	22
27			1	8
28				8
29		1	3	13
30			2	14
July 1			2	21
2			3	10
3			2	15
4	1			14
5			2	23
6	1	1	2	18
7			5	17
8		1	1	17
9	1	1	2	15
10	1		2	12
11	1		3	14
12			4	19
13	4	1	6	34
14	1		4	26
15	3			24
16	1			21
17	3	1	3	21
18	1		3	20
19			2	19
20	1	1	3	20
21	4		3	24
22	3		6	27
23	2	2	5	22
24	2		5	21
July 25	2	1	2	19
26	2	1	2	22
27	2	1	2	22
28			3	15
29	2	1	5	26
30	2	2	6	19
31			7	24
August 1	2	2	8	24
2	1	2	6	18
3	1	2	6	19
4	1	3	5	25
5		2	6	30
6	3	2	8	25
7	1	2	5	26
8	5	2	2	28
9	3	3	6	22
10	1		2	18
11		2	7	27
12	1	5	14	32
13	1	5	9	37
14	1	2	6	27
15	1	1	12	40
16	2	5	12	24
17	3	6	13	34
18		11	20	28
19	2	11	14	25
20		10	14	29
21	1	4	11	29
22	1	7	19	28
23	1	19	29	47
24	1	14	16	33
25	1	15	20	41
26		14	21	30
27		15	19	37
28		20	26	43
29	1	26	32	49
30	1	22	24	43
31	1	17	20	38
September 1	1	20	31	53
2		25	33	54
3		28	31	44
4	1	44	52	68
5		30	36	51
6		43	46	60
7		49	51	66
8	1	51	56	78
9		42	46	60
10	1	67	75	86
11	1	61	70	89
12		43	48	64
13		41	45	63
14		53	62	80
15		50	56	80
16		68	78	102
September 17	1	46	49	71
18		55	71	92
19		66	79	91
20		64	75	96
21	1	69	84	113
22	1	77	90	112
23	1	82	99	133
24		68	83	101
25	2	57	62	85
26	1	77	80	107
27	1	67	78	103
28	1	61	69	94
29		64	70	96
30		63	74	97
October 1	4	54	68	92
2	2	56	66	97
3	3	73	81	107
4		59	70	90
5		66	73	97
6		58	67	90
7		50	59	76
8	3	64	72	98
9	2	56	70	102
10	2	49	61	83
11	1	46	57	88
12		32	37	61
13	1	33	36	58
14	2	39	46	61
15		28	35	51
16		31	37	55
17	2	34	39	59
18	2	35	40	67
19	1	35	40	60
20	1	31	39	53
21		13	19	35
22	3	18	32	47
23	1	17	25	37
24		12	16	28
25	1	10	14	31
26		10	23	39
27	1	16	15	37
28	1	11	15	32
29	4	9	14	23
30		13	17	31
31		9	11	29
November 1	1	3	5	23
2	3	11	13	37
3	1	7	8	32
4	3	7	9	27
5		7	12	28
6	3	4	5	27
7	2	8	13	35
8	4	5	9	29
November 10	4	5	7	30
11	7	8	8	33
12	7	4	11	37
13	11	2	3	42
14	9	2	2	49
15	9	1	5	37
16	9	1	2	20
17	7	3	8	26
18	15	5	7	47
19	15	3	7	44
20	12	3	5	42
21	13	2	4	40
22	10		1	32
23	11	1	3	24
24	12	1	3	41
25	7	1	2	26
26	11	2	3	33
27	9	5	6	27
28	6	2	3	29
29	15			31
30	10			20
December 1	11	1	3	35
2	15	2	3	39
3	8	2	5	23
4	8	3	6	27
5	6			16
6	6	1	1	21
7	8	5	8	33
8	6	3	4	24
9	6	1	1	26
10	8			18
11	6		1	25
12	3			26
13	10			28
14	23		2	51
15	15	1	3	28
16	6	1	1	22
17	9			19
18	4	2	5	19
19	5		1	14
20	9		1	19
21	7		1	33
22	5	1	2	20
23	4	2	3	25
24	5			15
25	3		1	21
26	3			14
27	2			11
28	4	1	2	23
29	2			15
30	1			15
31	2			15
Total	574	3058	3950	6078

1878.

Day Ending.	Deaths from Yellow Fever.	Total Deaths.	Maximum Thermometer.	Minimum Thermometer.	Range.	Mean Thermometer.	Mean Humidity.	Mean Barometer.	Rain Fall.
July 1		12	90	76	14	83.5	67	29.9	
2		16	88	75	13	81.2	74	29.8	.94
3		12	83	76	7	79.2	78	29.8	.24
4		19	85	75	10	81.0	81	29.8	
5		9	87	75	12	80.0	80	29.9	.18
6		13	87	76	11	81.2	80	29.9	.09
7	1	24	91	76	15	82.2	73	30.0	
8		24	92	79	13	85.0	74	30.0	
9		17	91	78	13	84.0	65	30.0	
10		25	91	78	13	84.5	67	30.0	
11		21	91	77	14	84.0	74	30.0	.14
12		18	89	78	11	82.2	73	30.0	.10
13		8	88	75	13	81.5	70	30.1	.34
14		8	91	76	15	83.0	67	30.0	
15		13	93	77	16	86.7	59	30.0	
16		30	92	77	15	86.0	64	29.9	.23
17		11	90	79	11	82.5	70	29.8	.39
18	3	20	88	78	10	84.0	69	29.9	
19		15	89	77	12	84.2	72	29.9	
20		15	92	77	15	86.0	66	29.9	
21	2	17	91	77	14	82.0	72	30.0	2.74
22	3	19	90	75	15	83.2	76	29.9	
23	3	21	92	80	12	84.7	68	29.9	
24	3	30	93	81	12	86.2	67	29.9	
25	1	28	92	81	11	87.7	70	29.9	.10
26	6	24	91	78	13	85.0	70	29.8	.04
27	6	33	94	80	12	85.0	71	29.8	.88
28	6	25	91	79	12	85.2	74	29.9	.03
29	1	19	93	78	15	85.2	71	29.9	
30	7	26	88	80	8	84.0	71	29.9	.01
31	6	23	90	80	10	85.7	63	30.0	.05
Total	50	595	90.2	77.5	12.5	83.83	71	29.9	5.26
August 1	9	28	89	79	10	84.7	74	30.0	.05
2	8	28	91	78	13	85.7	69	29.9	.01
3	10	31	89	76	13	85.0	73	29.9	1.85
4	10	26	83	76	7	79.7	79	29.8	.09
5	6	28	88	75	13	83.0	74	29.8	.01
6	6	20	89	75	14	83.7	72	29.9	
7	10	32	91	77	14	84.7	75	29.9	
8	14	35	92	77	15	85.5	69	29.9	
9	14	38	92	78	14	85.7	72	29.9	
10	13	32	89	78	11	84.7	71	29.9	
11	13	29	90	78	12	84.0	73	29.9	.25
12	20	44	89	78	11	84.5	73	29.9	.02
13	14	37	90	77	13	82.2	76	29.9	.21
14	22	33	89	77	12	82.0	76	29.9	.05
15	31	48	91	77	14	84.7	71	29.9	
16	27	56	84	77	7	81.5	71	30.0	
17	41	63	85	74	11	84.0	75	30.0	.01
18	39	63	91	79	12	84.7	72	30.0	
19	51	78	91	77	14	85.0	67	30.0	
20	51	73	92	78	14	85.5	60	29.9	
August 21	59	83	93	77	16	86.2	71	29.9	
22	47	85	94	78	16	86.2	65	29.9	
23	51	65	91	78	13	85.2	68	29.9	
24	40	67	91	78	13	84.2	65	30.0	
25	27	55	90	77	13	84.7	63	29.9	
26	50	88	89	76	13	80.7	71	29.8	.01
27	51	79	89	73	16	82.2	67	29.9	.01
28	49	70	89	76	13	83.5	66	29.9	.01
29	66	100	86	74	12	78.7	80	29.9	2.05
30	57	84	86	74	12	79.5	77	29.9	.14
31	71	103	88	74	14	80.7	73	30.0	.03
Total	974	1701	89.4	76.7	12.7	83.5	71.6	29.9	4.90
September 1	74	94	87	76	11	80.7	72	30.0	.13
2	73	115	89	77	12	81.7	68	30.0	.01
3	92	120	87	77	10	80.2	77	30.0	.29
4	88	116	87	74	13	79.2	82	29.9	.97
5	60	103	87	76	11	81.7	74	29.9	
6	82	119	89	74	15	82.7	72	29.9	.01
7	85	123	89	78	11	82.5	72	29.9	.03
8	89	126	85	77	8	81.5	84	29.9	.95
9	80	130	88	76	12	84.0	68	29.8	
10	87	115	89	78	11	84.2	65	29.8	
11	73	100	85	71	14	74.3	59	29.9	
12	63	86	77	64	13	70.7	46	29.9	
13	60	94	75	61	14	70.2	45	30.0	
14	45	87	78	62	16	72.5	46	30.1	
15	69	89	82	65	17	75.5	48	30.1	
16	69	106	82	66	16	76.5	71	30.1	
17	73	109	85	71	14	78.7	78	30.1	
18	68	86	85	73	12	79.0	69	30.1	
19	56	89	86	73	13	78.5	73	30.0	
20	51	75	86	72	14	77.2	74	29.9	
21	45	66	85	71	14	78.7	81	30.0	.17
22	40	64	82	73	9	77.7	83	30.0	.10
23	55	85	87	73	14	79.7	80	30.0	.01
24	45	66	87	73	14	78.8	79	30.0	
25	44	46	85	71	14	78.5	76	30.0	
26	46	65	86	71	15	80.7	70	30.1	
27	60	102	87	74	13	80.2	76	30.0	
28	45	70	85	74	11	79.2	70	30.0	
29	48	75	83	72	11	77.5	66	29.9	
30	40	75	85	72	13	78.5	66	29.9	
Total	1693	2824	85	72.1	12.9	78.7	70.4	30.0	2.67
October 1	65	89	86	72	14	79.0	77	29.8	.53
2	51	64	86	72	14	79.0	76	29.9	.10
3	57	79	86	73	13	79.4	79	29.9	
4	41	63	86	73	13	79.4	56	29.9	
5	65	87	87	70	17	78.4	74	30.0	.06
6	39	60	86	71	15	78.3	76	30.0	
7	48	72	85	70	15	78.5	73	30.0	
8	41	57	86	72	14	79.0	85	30.0	.01
October 9	48	67	79	72	7	75.5	86	29.9	2.05
10	54	88	78	69	9	73.5	83	29.8	.20
11	44	65	81	68	13	74.5	76	29.9	
12	38	64	79	71	18	74.6	66	30.5	
13	32	56	81	64	17	72.5	67	30.0	
14	33	43	82	69	14	74.0	73	30.1	
15	37	43	79	69	10	74.0	73	29.9	
16	29	48	84	69	15	74.5	73	30.0	
17	31	58	78	70	8	74.0	61	30.1	.66
18	33	54	71	61	10	66.0	36	30.0	
19	25	49	67	50	17	58.5	52	30.1	
20	42	60	69	53	16	62.5	67	30.0	
21	33	58	76	60	16	69.0	72	29.9	
22	23	47	70	57	13	61.2	54	30.0	.07
23	21	59	67	49	18	59.7	52	30.1	
24	19	37	72	53	19	63.5	70	30.1	
25	27	50	75	59	16	68.0	75	30.2	
26	18	30	77	63	14	70.7	79	30.1	
27	15	34	74	59	15	65.0	77	30.1	
28	18	40	66	50	16	60.0	72	30.1	.01
29	10	22	70	59	11	66.0	60	29.8	1.48
30	6	31	70	62	8	65.0	72	30.1	
31	11	20	66	53	13	57.0	39	30.3	
Total	1047	1703	77.3	64.5	13.4	71.4	69.5	30.07	5.07
November 1	9	26	60	42	18	52.2	48	30.3	
2	5	37	67	46	21	58.7	63	30.2	
3	7	24	69	49	20	61.7	55	30.2	
4	5	21	70	54	16	63.2	54	30.2	
5	6	27	71	53	18	62.7	61	30.1	
6	4	26	71	55	15	67.7	84	30.0	
7	5	22	74	61	13	67.2	86	30.1	
8	4	26	76	61	15	70.7	72	30.1	
9	1	21	71	58	13	62.5	50	30.1	
10		12	75	57	18	66.5	72	30.0	
11	3	21	75	62	13	68.5	63	29.9	.23
12	2	20	64	57	7	59.5	56	30.0	
13	5	23	66	50	16	57.7	61	30.0	1.83
14	5	19	67	50	17	63.0	70	30.0	
15	6	22	72	61	12	65.7	83	29.9	
16	1	17	64	55	9	60.0	60	30.0	
17	6	16	64	56	8	60.0	81	30.0	.61
18	1	18	66	56	10	60.2	81	29.8	1.77
19	2	13	68	57	11	61.5	70	29.8	.53
20		13	71	53	18	60.7	63	29.9	
21	1	18	65	55	10	58.7	54	30.0	
22	5	17	64	47	17	54.7	53	30.0	
23	3	26	71	48	23	60.2	68	29.9	
24	1	12	76	55	21	66.5	76	29.9	
25	3	21	75	58	17	66.7	88	29.8	2.13
26		15	67	48	19	53.9	89	29.8	.68
27		14	57	43	14	49.5	63	30.0	
28		12	61	42	19	57.0	59	30.2	
November 29		17	64	[illegible]	23	53.5	65	30.2	
30		19	65	[illegible]	15	60.0	75	30.1	
Total	90	596	68.3	52.7	15.5	59.4	68.8	30.0	7.78
December 1		7	62	[illegible]	15	52.5	69	30.0	.15
2	1	11	57	[illegible]	12	50.2	60	30.1	
3	1	8	65	[illegible]	22	59.5	56	30.1	
4		21	67	[illegible]	21	58.0	50	30.1	
5		13	64	[illegible]	16	54.0	42	30.3	
6		13	69	[illegible]	24	49.0	59	30.2	
7	1	15	66	[illegible]	11	63.0	83	30.0	.53
8		15	68	[illegible]	9	67.0	89	29.8	.56
9		13	65	[illegible]	20	50.5	74	29.7	.30
10		11	57	40	17	56.0	58	29.9	
11		17	69	[illegible]	25	60.7	70	30.0	
12		14	70	[illegible]	19	62.7	71	30.2	
13		17	69	51	16	62.5	80	30.1	.10
14		17	67	50	17	57.2	90	29.9	1.24
15		11	59	41	15	59.5	59	30.0	
16		9	54	37	17	45.0	59	30.2	
17		15	54	37	16	45.7	56	30.3	
18		9	52	37	15	47.5	61	30.4	
19		17	51	42	9	48.2	78	30.3	.41
20		18	57	43	14	54.0	93	29.9	2.46
21		13	59	45	14	51.0	79	30.0	.17
22		10	59	41	18	50.0	51	30.3	
23		13	57	35	22	48.2	56	30.2	
24		9	44	40	17	48.0	90	30.2	.57
25		17	45	34	11	38.5	68	30.2	.04
26		18	41	32	13	36.0	84	30.0	.50
27		16	43	[illegible]	13	45.5	64	30.3	
28		16	64	[illegible]	18	45.0	68	30.3	
29		14	61	[illegible]	23	49.5	69	30.1	.22
30		16	62	[illegible]	13	53.5	94	30.2	.69
31		12	65	46	9	51.2	90	30.1	.63
Total	3	415	59.8	[illegible]	16.0	70.5	70.5	30.15	8.59

VITAL AND MORTUARY STATISTICS OF NEW ORLEANS.

DEATHS FROM ZYMOTIC AND EPIDEMIC DISEASES, (SMALL-POX, MEASLES, SCARLATINA, TYPHUS FEVER, TYPHOID FEVER, YELLOW FEVER, MALIGNANT OR ASIATIC CHOLERA, DIPHTHERIA, WHOOPING COUGH), AND FROM ALL DISEASES, WITH DEATH RATE PER 1000 INHABITANTS FROM EPIDEMIC AND ZYMOTIC DISEASES, FROM ENDEMIC DISEASES, AND FROM ALL CAUSES.

	Deaths from Small Pox and Varioloid.	Deaths from Measles.	Deaths from Scarlatina.	Deaths from Typhus Fever.	Deaths fr'm Enteric or Typhoid Fever.	Deaths from Yellow Fever.	Deaths from Malignant or Asiatic Cholera.	Deaths from Diphtheria.	Deaths from Hooping Cough.	Total Deaths from Zymotic and Epidemic Diseases.	Total Deaths from all Other Diseases.	Grand Total Deaths from all Causes.	Population of the City of New Orleans.	Death Rate per 1000 per Annum from Zymotic and Epidemic Diseases.	Death Rate per 1000 per Annum from all other Diseases.	Death Rate per 1000 per Annum from All Causes.
1844		10	4	3	44	148			22	231	4245	4476	86632	2.66	49.00	51.66
1845			191		76	2				199	2408	2607	89261	2.22	26.98	29.20
1847	27	18	15	154	243	2306	1	1	32	2797	4506	7303	108699	25.73	41.45	67.18
1848	105	61	119	372	223	808	1646		41	3375	5510	8885	115503	29.22	47.70	76.92
1849	133	10	22	164	178	769	3176		27	4479	5093	9572	122511	36.56	41.57	78.13
1850	37	57	91	190	103	107	1448		13	1925	5546	7511	120747	15.29	43.67	58.96
1851	38	26	29	228	103		430		16	870	6405	7275	138599	6.42	46.06	52.48
1852						456	1329			1785	6594	8379	147441	12.10	44.72	56.82
1853	17	123	126	103	146	7849	585		44	8991	6296	15287	154132	58.33	40.85	99.18
1855			19			2670	883			3572	3934	7506	158950	22.46	24.75	47.21
1856	2	53	18	22	115	74	43		53	380	4955	5335	161404	2.35	30.70	33.05
1857	103	104	79	8	118	199	21		27	662	4561	5223	163828	4.04	27.84	31.88
1858	108	7	79	20	189	4845	26	05	22	5397	5975	11372	165450	32.62	36.11	68.73
1859	43	13	121	7	214	91	27	253	31	800	5694	6494	166500	4.80	34.20	39.00
1860	22	60	200	10	163	15	30	145	75	720	6621	7341	168670	4.26	39.26	43.52
1861	1	35	198	5	104		12	78	14	445	4654	5099	169907	2.62	27.48	30.10
1863	2	98	43	9	257	2	4	188	55	658	6352	7010	172164	3.81	36.86	40.67
1864	605	34	200	11	268	6	5	337	39	1505	7061	8566	173588	8.67	40.67	49.34
1865	613	31	101	5	154	1	9	104	13	1091	5608	6699	174815	6.24	32.08	38.32
1866	188	82	41	12	116	192	1294	98	41	2064	5278	7342	178042	11.59	29.64	41.23
1867	47	2	24	23	119	3107	581	31	28	3962	5624	9586	181269	21.85	31.03	52.88
1868	14	1	15	5	58	3	122	10	4	245	4593	4838	184196	1.32	25.07	26.25
1869	141	217	13	5	63	3	4	10	121	586	5007	5593	187723	3.12	26.67	29.79
1870	528	23	44	13	80	587	3	10	9	1306	5636	6942	191418	6.84	29.42	36.26
1871	9	12	5	4	71	54	6	14	1	169	5426	5595	193412	0.87	28.05	28.92
1872	29	76	5	4	67	39		30	23	282	5840	6122	196406	1.43	29.74	31.17
1873	599	69	5	3	57	226	142	48	61	1120	6385	7505	198900	5.58	32.15	37.73
1874	587		4	2	95	11	6	102	16	823	5975	6798	201324	4.08	29.67	33.75
1875	342	1	144	2	57	61	4	[illegible]	58	738	5379	6117	203868	3.61	26.39	30.00
1876	232	231	123	2	53	42		[illegible]	39	762	5495	6257	206382	3.69	26.63	30.32
1877	1099	15	10	1	69	1		[illegible]	26	1254	5454	6708	208876	6.00	26.11	32.11
1878	151	3	1	23	44	4046		[illegible]		4327	5991	10318	211371	20.47	28.34	48.81
1879			1		33	19		[illegible]	9	120	5002	5122	213865	0.54	23.38	23.94
1880	1	97	56	1	52	2		[illegible]	70	360	5263	5623	216140	1.66	24.32	25.98
1881	5	26	197		66			[illegible]	1	387	6019	6406	216140	1.79	27.85	29.64
	5731	1615	2263	1422	3786	28730	11847	2017	1027	58447	190385	248832	5957730	9.81	31.95	41.76

Vital and Mortuary Statistics of New Orleans, 1849-1881, Monthly Mortality.

YEARS.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1849	1182	600	1397	968	1007	870	435	485	666	910	712	630	9862
1850	582	425	833	491	601	459	584	910	653	620	593	756	7819
1853	584	463	436	532	671	656	2310	6201	1627	674	714	644	15633
1855	†	†	†	†	851	1316	1052	1747	1454	502	321	448	7691
1856	379	330	342	334	390	797	583	569	497	481	482	†	5200
1857	372	371	426	530	504	497	429	482	417	510	602	300	5581
1858	448	372	518	482	576	531	813	1826	3069	1775	834	476	11710
1859	504	472	438	479	621	525	701	503	656	611	788	549	6847
1860	567	514	567	633	646	710	779	557	622	520	515	671	7341
1861	518	635	449	411	510	657	463	485	395	431	496	†	5449
1867	395	302	401	350	310	501	551	1039	2498	1042	958	720	10098
1869	392	292	408	555	602	525	351	421	422	474	437	563	5593
1870	431	429	600	545	621	673	497	460	854	681	467	512	6942
1871	443	347	491	440	411	535	468	551	451	441	549	429	5595
1872	447	630	430	418	713	572	483	569	425	432	449	473	6122
1873	642	556	603	600	930	502	773	498	624	713	506	504	7505
1874	583	481	452	609	548	517	700	708	440	636	527	597	6798
1875	552	454	461	522	403	531	622	447	675	473	447	494	6117
1876	436	460	550	447	601	653	536	489	503	477	526	509	6257
1877	571	560	788	555	738	633	504	510	439	417	543	415	6708
1878	403	511	437	475	535	437	492	1784	2558	1845	491	359	10318
1879	574	360	376	369	509	402	422	422	387	492	416	459	5122
1880	446	438	402	461	581	573	422	407	450	466	517	460	5623
1881	543	466	561	529	683	733	571	472	427	442	508	481	6406
Total	11289	10556	12456	11735	14568	14955	15667	22554	21133	17065	[illegible]	11801	178325
Average Monthly Mortality	521	459	541	510	607	623	653	940	880	711	[illegible]	513	7430

From 1849 to 1867 includes Still-born.
From 1869 to 1881 excludes Still-born.

NATIONALITIES.

COUNTRY.	1853	1857	1858	1859	1860	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	Total 20 Years.
Australia																				1	1
Africa		12	8	6	4	12	2	6	10	9	11	13	13	2	7	6	9	6	4	4	145
Austria	108	7	29	15	17	44	6	7	9	8	7	24	11	13	10	9	50	14	8	7	405
At Sea					1	9		3	2	2		4	1						1		10
British America	25	10	10	16	19	10	3	4	13	1	6	9	4	3	1	14	42	15	3	6	214
Belgium	76	2	13			11	5	4	6	1			6	5	5	4	19	3	4	4	168
Canada						52	10	10	11	11	8	19	11	8	6				6	13	105
China				1	1	1	3	1	7	6	5	14	7	7	5	4	11	8	4	10	95
Denmark		4	16	13	5	22	6	3	15	6	11	8	8	5	4	5	22	5	5	8	171
East Indies		7	4	1	5	3						1			1						22
England	227	63	214	76	101	193	49	40	99	90	70	82	50	63	68	533	958	478	519	72	4060
Finland																			1		1
France	392	166	677	208	210	540	207	1?6	352	231	212	290	258	247	253	246	567	208	193	231	5922
Germany	1503	308	1411	424	443	995	302	?70	518	405	411	534	477	396	388	465	605	421	363	446	11484
Greece							2		1		1	2	2	4	1		5	3	1	4	26
Holland					14	6	2	2	5	3	3	2	3	3	4	2	8	2	4	3	68
Ireland	2867	686	1891	506	998	1183	439	?74	551	569	537	597	325	463	450	†	†	†	†	487	13173
Italy		20	114	24	20	144	33	42	199	52	43	52	78	51	54	64	382	50	47	56	1523
Louisiana	1657	*	*	*	*	*	*	*	*	*	*	*	*	*	*	3941	5354	2873	3518	3297	21240
Mexico		11	16	14	10	5	11	9	7	12	4	12	8	9	2	8	11	9	9	9	178
Madeira	28	1	6				1	3	2	5		1	1								48
Norway and Sweden		15	20	10	18	21	6	10	14	18	15	15	17	14	13	14	25	11	6	14	270
Persia										1											1
Poland		3	17	6	2	17	1	2	12	4	2	1	2	4	3	2	17			1	90
Portugal		3	5	5	10	3	4	5	10	4	11	6	9	7	8	8	11	4	7	4	124
Prussia		28	114	38	39	171	36	16	32	20	14	15	17	8	11						559
Russia		2	7			20	3	1	9	5	5	3	3	3	4	2	14	2	7	4	94
Scotland		17	50	23	40	66	10	19	31	21	36	28	25	20	17					14	417
Sandwich Islands						1															1
South America		4			2	3	1	3	2	1		2	2	2	2	2	3	2	1	1	33
Spain	63	13	66	42	45	33	29	19	44	28	38	49	36	34	28	40	44	28	27	43	789
Switzerland		23	76	28	21	40	14	14	38	21	31	21	19	9	16	20	44	20	22	20	500
Turkey								1						2			7				10
United States (not Louisiana)	495	3209	5624	4073	3203	4990	3338	?071	4753	4285	4474	5617	5041	4616	4517	1066	1531	822	790	1017	67401
Wales						5	1	1	8	3	2	2	2	1	3				2	1	31
West Indies	23	27	42	47	34	34	32	33	54	40	68	63	65	44	38	51	69	44	27	30	861
Not stated	8059	940	1278	1271	2010	1482	787	?12	577	199	97	109	93	74	338	202	200	66	34	3	18651
Total	15633	5581	11710	6847	7341	10096	5343	?001	7391	6059	6122	7505	6798	6117	6257	6708	10318	5122	5623	6406	148978

†Included under England.
*Included under United States.

COLOR—VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, LA., 1847-1881.

Color.	1847	1849	1850	1853	1856	1857	1858	1859	1860	1863	1864	1865	Total 12 Years.	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	Total 16 Years.	Grand total, 28 Years.
Whites	6274	7974	6319	14292	4274	4593	10592	5781	5884	5015	6032	4685	81718	4984	7866	3503	3757	4602	3782	3871	4739	4290	3960	3847	3976	8062	3267	3637	4127	72188	153906
Blacks	1220	1888	1500	1341	926	988	1118	1066	1179	1735	2832	2311	18024	2392	1931	1676	2092	2560	2115	2143	2684	2395	2151	2305	2732	2256	1855	1986	2279	35552	53576
Not stated	5								278	508		101	892	378	299	164	152	229	162	108	82	104	[illegible]	105						1880	2772
Total	7499	9662	7819	15633	5200	5581	11710	6847	7341	7258	8864	7020	100634	7754	10096	5343	6001	7391	6059	6122	7505	6798	6117	6257	6708	10318	5122	5623	6406	109620	210254

SEX—VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, LOUISIANA. 1849—1881.

Sex.		1849	1850	1853	1856	1857	1858	1859	1860	1863	1864	1865	Total 11 Years.	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	Total 16 Years.	Grand total, 27 Years.
Males		6458	4802	9705	3108	3245	7675	4193	4193	4405	4895	38[illegible]	56585	4372	6239	2841	3275	4166	3530	3526	4396	3982	3410	3381	3650	6196	2969	3053	3593	62785	120370
Females		3404	3017	5452	2092	2336	4035	2654	2654	2578	3739	29[illegible]	34924	3052	3566	2292	2592	2838	2481	2568	3070	2798	2660	2621	3058	4122	2151	2570	2813	45271	80195
Not stated				416					494	275	230	211	1626	330	291	207	128	87	48	28	39	18	37	255						1564	2190
Total		9862	7819	15633	5200	5581	11710	6847	7341	7258	8864	7020	93135	7754	10096	5343	6001	7391	6059	6122	7505	6798	6117	6257	6708	10318	5122	5623	6406	109620	202755

AGES—VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, LOUISIANA. 1849-1881.

Ages.		1849	1850	1853	1856	1857	1858	1859	1860	1863	1864	1865	Total 11 Years.	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	Total 16 Years.	Grand total, 27 Years.
Under 1 year		1232	1323	1954	1608	1568	1944	1609	1467	952	1365	13[illegible]	16397	1524	1863	1311	1365	1587	1596	1367	1539	1396	1262	1190	1222	1260	1115	1217	1231	22224	38621
From 1 to 2 years		903	937	1296	434	468	603	538	668	694	600	57[illegible]	13053	518	520	364	472	410	324	405	507	399	403	494	437	455	261	373	394	6745	27318
From 2 to 5 years					337	475	1001	505	581	643	862	6[illegible]		510	566	229	493	353	204	337	516	449	426	504	441	1523	227	398	390	4353	
From 5 to 10 years		342	249	499	155	205	365	320	323	279	595	[illegible]	3783	360	491	152	201	180	126	162	229	251	271	273	308	693	132	211	240	4353	8136
From 10 to 15 years		530	126	2025	71	117	293	153	115	140	255	[illegible]	6300	172	253	90	105	149	195	114	153	123	133	138	150	2??	97	115	150	2364	12175
From 15 to 20 years			279		87	130	579	211	175	271	280	[illegible]		244	466	132	146	253	153	170	182	224	203	200	272	416	127	129	188	3511	
From 20 to 25 years		1091	1342	4514	298	304	1539	445	400	782	803	[illegible]	16548	1069	942	221	249	491	336	327	549	372	360	287	910	1549	520	241	334	13896	30444
From 25 to 30 years					431	408	1486	549	602						1039	282	250	582	370	368	514	383	351	346				267	341		
From 30 to 40 years		1603	1224	2093	730	768	2001	1025	956	725	780	7[illegible]	12633	991	1441	588	581	929	753	750	880	810	670	644	709	1192	588	540	684	12953	25586
From 40 to 50 years		833	615	901	483	523	1040	762	701	595	717	6[illegible]	7819	737	946	488	570	754	667	675	775	740	630	637	757	977	591	601	705	11253	19072
From 50 to 60 years		382	391	448	253	297	463	331	378	367	600	4[illegible]	4335	520	604	366	445	559	509	529	603	559	519	536	571	706	126	534	638	8664	12999
From 60 to 70 years		192	191	206	131	155	216	190	216	236	358	3[illegible]	2398	333	344	260	276	348	320	365	404	467	421	420	445	466	439	449	576	6342	8740
From 70 to 80 years		101	100	83	80	97	118	95	99	155	183	1[illegible]	1270	147	163	136	133	189	166	220	215	227	230	261	273	313	313	231	337	3557	4827
From 80 to 90 years		48	44	40	55	38	45	51	47	84	110	[illegible]	628	51	70	62	45	64	74	62	77	66	78	99	99	121	105	131	131	1355	1983
From 90 to 100 years		20	19	18	20	18	11	21	21	37	38	[illegible]	259	19	12	22	30	24	16	34	38	26	21	29	52	41	46	61	42	699	1037
100 years and upwards		3	1	1	2	6	6	10	3	14	21	[illegible]	79	10	10	9	15	12	17	18	16	19	11						20		
Age unknown		1682	1048	1495	25				587	1284	991	[illegible]	7633	549	357	585	575	509	320	219	262	247	17[illegible]	172	30	115	32	20	5	4154	11787
Total		9862	7819	15633	5200	5581	11710	6847	7341	7258	8864	7020	93135	7754	10096	5343	6001	7391	6059	6122	7505	6798	6117	6257	6708	10318	5122	5623	6406	109620	202755

POPULATION AND MORTALITY OF NEW ORLEANS 1880-1883—VITAL STATISTICS OF NEW ORLEANS DURING FOUR YEARS, 1880-1883 INCLUSIVE.

POPULATION OF NEW ORLEANS.

WHITE.				COLORED.			
YEAR.	Males.	Females.	Total.	YEAR.	Males.	Females	Total.
1880	75693	82702	158395	1880	25247	32501	57748
1881	76451	83844	160295	1881	25740	32816	58556
1882	77224	84994	162218	1882	26246	33129	59375
1883	77986	86178	164164	1883	26756	33450	60206
1884	78753	87372	166125	1884	27277	33771	61048

Total Whites and Colored.

YEAR.	Males.	Females	Total.
1880	100990	115203	216143
1881	102190	116660	218850
1882	103471	118122	221593
1883	104742	119628	224370
1884	106030	121143	227173

MORTALITY OF NEW ORLEANS.

WHITE.				COLORED.			
YEAR.	Males.	Females.	Total.	YEAR.	Males.	Females.	Total.
1880	2050	1587	2637	1880	1003	983	1986
1881	2419	1708	4127	1881	1178	1101	2279
1882	2104	1478	3582	1882	1225	1115	2310
1883	2657	1895	4552	1883	1634	1337	2971
Total	9230	6668	15898	Total	5040	4536	9576

Total Whites and Colored.

YEAR.	Males.	Females.	Total.
1880	3053	2570	5623
1881	3593	2813	6406
1882	3329	2593	5922
1883	4291	3232	7523
Total	14266	11208	25474

DEATH-RATE OF NEW ORLEANS PER 1000 POPULATION.

WHITE.				COLORED.			
YEAR.	Males.	Females.	Total.	YEAR.	Males.	Females.	Total.
1880	26 8	19 0	22 82	1880	39.34	30.09	34.1
1881	31 4	20 2	25 59	1881	45.32	33 36	38.3
1882	27.1	17 1	21.88	1882	46.22	33 49	39.
1883	35 1	21 8	27 56	1883	60.47	49.78	49.
Mean	30 1	19 5	24 46	Mean	47 84	34.18	40.

Total Whites and Colored.

YEAR.	Males.	Females.	Total.
1880	30 03	22.16	25
1881	34.94	23 96	29
1882	31.97	21.81	26
1883	40.71	26.84	33
Mean	34.41	23.67	28

DEATH-RATE OF NEW ORLEANS PER 1000 POPULATION EXCLUSIVE DEATHS FROM SMALL-POX.

Year.		Year.	
1880	25 85	1882	2
1881	29.06	1883	2

VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, 1849-1881, MONTHLY MORTALI

YEARS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
1849	1182	600	1307	968	1007	870	435	485	666	910	712	630	
1850	582	425	833	491	601	459	584	916	653	620	899	756	
1853	581	463	456	532	671	656	2216	6201	1627	674	712	844	
1855	?	?	?	?	851	1316	1052	1747	1454	502	321	448	
1856	379	339	342	334	390	797	583	569	497	481	489	?	
1857	372	371	498	530	504	497	429	482	417	510	602	369	
1858	448	362	518	482	576	531	813	1826	3069	1775	834	476	
1859	504	472	438	479	621	525	701	503	656	611	788	549	
1860	567	514	567	633	646	730	779	557	622	520	535	671	
1861	518	635	448	411	510	657	463	485	395	431	496	?	
1867	397	362	401	350	316	561	551	1039	2498	1942	959	720	
1869	328	292	408	555	602	525	551	421	422	474	452	563	
1870	471	429	600	545	621	673	497	480	858	681	465	512	
1871	443	347	491	440	411	535	488	551	451	441	568	429	
1872	447	630	430	418	713	572	483	569	425	432	430	473	
1873	642	556	603	600	930	562	773	498	624	713	500	504	
1874	583	481	452	609	548	517	700	708	440	636	527	597	
1875	572	454	461	522	403	551	622	447	675	473	443	494	
1876	436	460	559	447	601	653	536	469	503	477	524	592	
1877	571	589	788	555	738	633	504	516	439	417	543	415	
1878	403	511	437	475	535	427	492	1784	2558	1845	492	359	
1879	574	360	376	369	509	402	422	422	327	492	410	459	
1880	446	438	462	461	581	573	422	407	450	466	517	460	
1881	443	466	551	529	683	733	571	472	427	442	508	481	
Total	11989	10556	12456	11735	14568	14955	15667	22554	21153	17065	13726	11801	
Average Monthly Mortality	521	459	541	510	607	623	653	940	880	711	572	513	

From 1849 to 1867 includes Still-born.
From 1869 to 1881 excludes Still-born.

NATIONALITIES.

COUNTRY.	1853	1857	1858	1859	1860	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	Total 20 years
Australia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1
Africa	.....	12	8	6	4	12	2	8	10	6	11	13	13	2	7	6	9	8	4	4	145
Austria	108	7	29	15	17	44	6	7	9	9	7	24	11	13	10	9	50	14	9	7	405
At sea	.....	.....	.....	.....	1	2	.....	3	2	2	.....	4	1	.....	.....	.....	.....	.....	1	.....	16
British America	25	10	10	16	19	10	3	4	13	1	6	9	4	3	1	14	42	15	3	6	214
Belgium	76	2	13	.....	.....	11	5	4	6	1	.....	.....	6	5	5	4	19	3	4	4	168
Canada	.....	.....	.....	.....	.....	52	10	10	11	11	8	19	11	8	6	.....	.....	.....	6	13	165
China	.....	.....	.....	1	1	1	3	1	7	6	5	14	7	7	5	4	11	8	4	10	95
Denmark	.....	4	16	13	5	22	6	3	15	6	11	8	8	5	4	5	22	5	5	8	171
East Indies	.....	7	4	1	5	3	...	.....	...	.....	...	1	.....	.....	1	.....	.....	.....	.....	.....	22
England	227	63	214	76	101	193	49	49	99	90	70	82	56	63	68	533	958	478	519	72	4060
Finland	.....	.....	.....	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1
France	392	166	677	208	219	549	207	196	352	231	212	290	258	247	253	246	587	208	193	231	5922
Germany	1593	308	1411	424	443	995	302	279	518	405	411	534	477	396	388	465	905	421	363	446	11,484
Greece	.....	.....	.....	.....	.....	.....	2	.....	1	....	1	2	2	4	1	.....	5	3	1	4	26
Holland	.....	.....	.....	.....	14	8	2	2	5	3	3	2	3	3	4	2	8	2	4	3	68
Ireland	2867	686	1891	506	998	1133	439	474	551	569	537	597	525	463	450	†	†	†	†	487	13,173
Italy	.....	20	114	24	20	144	33	42	199	52	43	52	76	51	54	64	382	50	47	56	1,523
Louisiana	1657	*	*	*	*	*	*	*	*	*	*	*	*	*	*	3941	5354	2873	3518	3897	21,240
Mexico	.....	11	18	14	10	5	11	9	7	12	4	12	8	9	2	8	11	9	9	9	178
Madeira	28	1	6	.....	.....	....	1	3	2	5	.....	1	1	.....	.....	.....	.....	...	.....	.....	48
Norway and Sweden	.....	15	20	10	18	21	6	10	14	18	15	15	17	14	13	14	25	11	6	14	276
Persia	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Poland	.....	3	17	6	2	17	1	2	12	4	2	1	2	4	3	2	17	....	..	1	96
Portugal	.....	3	5	5	10	3	4	5	10	4	11	6	9	7	8	8	11	4	7	4	124
Prussia	.....	28	114	38	39	171	36	16	32	20	14	15	17	8	11	....	.....	...	.....	...	559
Russia	.....	2	7	.....	.....	20	3	1	9	5	5	3	3	4	2	14	2	7	4	94
Scotland	.....	17	50	23	40	66	10	19	31	21	36	28	25	20	17	.....	.....	.....	.....	14	417
Sandwich Islands	.....	.....	.....	....	.....	1	.....	...	...	.....	.....	.....	....	....	....	....	.....	.....	.....	....	1
South America	.....	4	.....	.....	2	3	1	3	2	1	.....	2	2	2	2	2	3	2	1	1	33
Spain	83	13	66	42	45	53	29	19	44	28	38	49	36	34	28	40	44	28	27	43	789
Switzerland	....	23	76	28	21	46	14	14	38	21	31	21	19	9	16	20	44	26	22	20	509
Turkey	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	2	.....	.....	7	...	.....	...	10
United States (not Louisiana)	495	3209	5624	4073	3263	4990	3338	3971	4753	4285	4474	5517	5041	4616	4517	1066	1531	822	799	1017	67,401
Wales	.....	.....	....	.....	.....	5	1	1	8	3	2	2	2	1	3	.....	.....	.....	2	1	31
West Indies	23	27	42	47	34	34	32	33	54	40	68	63	65	44	38	51	59	44	27	36	861
Not stated	8,059	940	1278	1271	2010	1482	787	812	577	199	97	109	93	74	338	202	200	86	34	3	18,651
Total	15,633	5,581	11,710	6,847	7,341	10,096	5,343	6,001	7,391	6,059	6,122	7,505	6,798	6,117	6,257	6,708	10,318	5,122	5,623	6,406	148,978

* Included under United States.

† Included under England.

VITAL AND MORTUARY STATISTICS OF NEW ORLEANS.

DEATHS FROM ZYMOTIC AND EPIDEMIC DISEASES (SMALL-POX, MEASLES, SCARLATINA, TYPHUS FEVER, TYPHOID FEVER, YELLOW FEVER, MALIGNANT OR ASIATIC CHOLERA, DIPHTHERIA, WHOOPING COUGH), AND FROM ALL DISEASES, WITH DEATH RATE PER 1000 INHABITANTS, FROM EPIDEMIC AND ZYMOTIC DISEASES, FROM ENDEMIC DISEASES, AND FROM ALL CAUSES.

	Deaths from Small Pox and Variolord.	Deaths from Measles.	Deaths from Scarlatina.	Deaths from Typhus Fever.	Deaths from Enteric or Typhoid Fever.	Deaths from Yellow Fever.	Deaths from Malignant or Asiatic Cholera	Deaths from Diphtheria.	Deaths from Whooping Cough	Total Deaths from Zymotic and Epidemic Diseases.	Total Deaths from all Other Diseases.	Grand Total Deaths from all Causes.	Population of the City of New Orleans.	Death Rate per 1000 per Annum from Zymotic and Epidemic Diseases.	Death Rate per 1000 per Annum from all other Diseases.	Death Rate per 1000 per Annum from All Causes.
1844.	....	10	4	3	44	148	...	....	22	231	4245	4476	86632	2.66	49.00	51.66
1845.	....	....	121	..	76	2	.....	...	....	199	2408	2607	89261	2 22	26.98	29.20
1847.	27	38	15	154	233	2306	1	1	22	2797	4506	7303	108699	25.73	41.45	67.18
1848.	105	61	119	372	223	808	1646	...	41	3375	5510	8885	115503	29.22	47.70	76.92
1849.	133	10	22	164	178	769	3176	....	27	4479	5093	9572	122511	36.56	41.57	78.13
1850.	37	57	21	199	103	107	1448	....	13	1985	5546	7531	129747	15.29	43.67	58.96
1851.	38	26	29	228	103	.....	430		16	870	6405	7275	138599	6.42	46.06	52.48
1852.	....	....			....	456	1329	....	...	1785	6594	8379	147441	12 10	44.72	56.82
1853.	17	123	126	103	146	7849	585	....	44	8991	6296	15287	154132	58.33	40.85	99.18
1855.	....	....	19	..	...	2670	883	....	....	2572	3934	7506	158980	22 46	24.75	47.21
1856.	2	53	18	22	115	74	43	...	53	380	4955	5335	161404	2.35	30.70	33.05
1857.	103	104	79	8	118	199	24	....	27	662	4561	5223	163828	4 04	27.84	31.88
1858.	108	7	79	20	189	4845	26	95	28	5397	5975	11372	165450	32.62	36.11	68.73
1859.	43	13	121	7	214	91	27	253	31	800	5694	6494	166500	4.80	34.20	39.00
1860.	22	60	200	10	163	15	30	145	75	720	6621	7341	168670	4 26	39 26	43 52
1861.	1	35	198	5	102	.....	12	78	14	445	4654	5099	169907	2.62	27 48	30 1
1863.	2	98	43	9	257	2	4	188	55	658	6352	7010	172361	3.81	36 86	40.6
1864.	605	34	200	11	268	6	5	337	39	1505	7061	8566	173588	8 67	40 67	49.3
1865.	613	31	161	5	154	1	9	104	13	1091	5608	6699	174815	6.24	32 08	38.3
1866.	188	82	41	12	116	192	1294	98	41	2064	5278	8342	178042	11.59	29.64	41.2
1867.	47	2	24	23	119	3107	581	31	28	3962	5624	9586	181269	21.85	31 03	52.8
1868.	14	1	15	5	58	3	129	16	4	245	4593	4838	184496	1.32	25.07	26.3
1869.	141	217	13	5	63	3	4	19	121	586	5007	5593	187723	3.12	29.67	29.7
1870.	528	23	44	13	80	587	3	19	9	1306	5636	6942	191418	6 84	29.42	36.9
1871.	2	12	5	4	71	54	6	14	1	169	5426	5595	163412	0.87	28.05	28.9
1872.	29	76	5	4	67	39	..	39	23	282	5840	6122	196406	1.43	29.74	31.1
1873.	509	69	5	5	57	226	142	46	61	1120	6385	7505	198900	5.58	32.15	37.7
1874.	587	....	4	2	95	11	6	102	16	823	5975	6798	201394	4.08	29.67	33
1875.	342	1	144	2	57	61	4	69	58	738	5379	6117	203888	3.61	26.39	30.0
1879.	232	231	123	2	53	42	.....	40	39	762	5495	6257	206382	3 69	26.63	30.
1877.	1099	15	10	1	69	1	.....	33	26	1254	5454	6708	208876	6.00	26.11	32.
1878.	151	3	1	23	44	4046	.....	59	....	4327	5991	10318	211371	20.47	28.34	48.
1876.	..	...	1	....	33	19	.....	58	9	120	5002	5122	213865	0.54	23 38	23
1880.	1	97	56	1	52	2	....	81	70	360	5263	5623	216140	1 66	24.32	25.
1881.	5	26	197		66	.....	.....	92	1	387	6019	6406	216140	1.79	27.85	29
	5731	1615	2263	1422	3786	28739	11847	2017	1027	58447	190385	248832	5957750	9.81	31.95	41.

CONSUMPTION (PHTHISIS PULMONALIS).

On examination, the mortuary records of New Orleans will show t phthisis pulmonalis, commonly called consumption, does not confine ravages to more northern cities, but is the cause of an alarming morta even amongst the natives (creoles of New Orleans). I have carefully ex ined and consolidated the mortuary statistics of the Charity Hospital New Orleans, with the following results:

During a period of eighteen years preceding the civil war—1842 to 1 —there were treated in the Charity Hospital of New Orleans, 5699 c of phthisis pulmonalis, of which 3084 terminated fatally, giving 54.1 cent mortality. During the sixteen years following the recent civil v there were treated in the Charity Hospital 5251 cases of phthisis pul nalis, in which 2525, or 40.8 per cent, died. During a period of thirty- years—1842 to 1880—there were treated in the Charity Hospital of N Orleans, 10,950 cases of phthisis pulmonalis, 5669 or 51.2 per cent of w

erminated fatally. While the statistics of the Charity Hospital refer iefly to the laboring classes, and to those who have been reduced in cir-mstances by misfortune and disease, at the same time the statistics of e city at large illustrate to an equal extent the destructive effects of this sidious disease.

Thus, the deaths from phthisis pulmonalis were as follows in New Orleans r the respective years :

Years.	Deaths from Phthisis Pulmonalis.	Years.	Deaths from Phthisis Pulmonalis.	Years.	Deaths from Phthisis Pulmonalis.
45	360	1860	834	1871	780
48	576	1861	654	1872	784
49	592	1862	761	1873	850
50	674	1863	839	1874	810
52	787	1864	664	1875	799
53	755	1865	600	1876	882
55	652	1866	671	1877	888
56	568	1867	632	1878	880
57	624	1868	684	1879	823
58	779	1870	657	1880	863
59	876				

During a period of years extending from 1845 to 1881, the deaths from thisis-pulmonalis have, with the exception of a single year, annually ceeded half a thousand, and in many years have been more than eight ndred.

During ten years—1845-1858—the deaths from phthisis-pulmonalis, in w Orleans numbered 6367; during ten years, 1859-1869, 7251; during ven years, 1870--1880, 9016. We have thus during a period of thirty-one rs, 1845-1880, a grand total of 22,598 (twenty-two thousand five hundred l ninety-eight) deaths by phthisis-pulmonalis.

Surely a disease which steadily and remorsely claims its victims each r, which in any long series of years has been as destructive as the dreaded low fever, should secure the earnest consideration of those charged with sanitary affairs of this city. The epidemic of 1878, threw the profes-nal minds of a certain order, into a state of morbid excitability on the ject of yellow fever, and the public have been served with numerous ubrations on this subject, and quarantine.

n comparison with phthisis-pulmonalis, which every year destroys its usands in every State of this Union, yellow fever should be regarded y as a causal and minor disease, visiting only certain limited portions the tropical and temperate regions at long intervals. We hear much of cost of epidemics, but nothing as to the fearful cost of such diseases as hisis, which holds its doomed victims in its deadly embrace for months l even years, and inflicting, in addition to indescribable tortures, vast and nous pecuniary expenses. I have given the stern facts with the design arousing the attention of this people to the consideration of some of the minent causes of this disease and some of the modes of prevention. This ject of personal and domestic sanitation should appeal to all alike. You y escape the yellow fever by leaving infected places; in other words en the disease appears the only sure remedy is flight, but you cannot es-pe those causes of disease which spring from your habits, modes of ing and climate, and which are ever present with you, in your assem-

blies, in your counting-houses, in your dwellings, around your firesides and in your beds devoted to quiet and rest.

The chief causes of the prevalence of phthisis-pulmonalis in New Orleans appear to be:

1. Imperfect drainage.
5. The saturation of the atmosphere with moisture.
3. Imperfect construction of houses.
4. Imperfect ventilation of houses.
5. Crowding.
6. The absence of regular exercise for diversion and recreation.
7. Imperfect nourishment.
8. Hereditary taint or predisposition.

A volume might be written on the preceding divisions or causes, but our intention is clearly to present practical observations which may prove of benefit to those interested.

Owing to the peculiar topographical and geographical situation of New Orleans, the soil is saturated with moisture, and the atmosphere is habitually near the dew point. Large portions of the city are compactly built with brick, and the sudden changes of the fall, winter and spring are frequently manifested by the precipitation of the moisture on the cold walls in the form of streams of water.

Dampness checks the cutaneous perspiration; it abstracts the normal heat and electricity from the body; it holds the noxious exhalations from the human body, and from all sources and it promotes the devolopment of low forms of disease, of which phthisis may be taken as a type.

In many instances no attention has been paid to the proper filling in with sand and gravel of building lots, and stagnant water frequently stands under the houses, and is a potent source of disease. Whole blocks of buildings can be pointed out in the heart of this great city in which there is no proper ventilation, and in which the lowest floor rests directly upon the damp earth. It is not to be wondered at that the floors of these damp, unventilated rooms and stores rot continually, and must be almost annually renewed.

Houses, churches, school-houses, stores, and all buildings inhabited or occupied by human beings, should be thoroughly ventilated—laterally and perpendicularly. The air should circulate freely under the lower floor. The air should be admitted by ventilators both in the front and rear of each room, and also, when practicable, laterally; and a system of ventilation should be so arranged as to allow of the escape of the foul air of the sleeping apartments directly up through the roof into the open air.

If people would send for the carpenter and properly ventilate their houses, they would not so often need his services in the grave-yard.

The effects of imperfect ventilation and close confinement and crowding with insufficient food, is fully illustrated by the frequent occurrence of phthisis pulmonalis among females who are compelled to live by the needle alone, and who occupy small, unventilated houses, resting almost directly upon the ground. Regular exercise in the open air. nutritious food, and such thorough ventilation as shall at all times secure pure air in the store, workshop, sitting-room and bedroom, are the great means of preventing the development of phthisis (consumption.)

War destroys its thousand, but phthisis claims its tens of thousand.

The improvidence, ignorance and avarice of mankind, as manifested in the neglect of sanitary laws, in the construction and conduct of dwelling houses, stores, factories, school-houses and churches, are more destructive to human life than yellow fever or all other pestilences.

ABLE SHOWING DEATHS FROM PHTHISIS PULMONALIS BY MONTHS, DURING THE YEARS 1869 TO 1880, INCLUSIVE.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Death rate per 1000 per annum	Population.
69	42	43	48	72	59	62	67	59	51	60	61	60	684	3.58	191.000
70	56	52	81	74	53	64	66	48	71	55	53	84	757	3.96	
71	55	54	84	56	59	74	58	63	63	66	88	60	780	4 08	
72	56	81	58	49	79	66	56	76	57	79	68	59	784	4.10	
73	90	58	66	68	73	58	88	64	67	89	57	72	850	4.45	
74	81	64	52	79	67	58	68	69	51	81	66	74	810	3.85	210.000
75	80	84	67	65	52	59	77	62	87	58	52	56	799	3.80	
76	76	60	94	58	70	64	82	63	88	66	92	69	882	4.20	
77	74	81	86	57	71	92	70	57	83	63	83	71	888	4.23	
78	65	75	77	66	68	108	69	88	89	59	89	47	880	4.19	
79	76	73	77	74	71	37	98	47	54	101	54	61	823	3.92	
80	67	69	85	68	69	70	67	54	65	60	94	95	863	3.99	216.000
Total	818	774	875	786	791	812	866	750	826	837	857	808	9800	....	.....
Average	68.1	64.5	72.7	65.5	65.9	67.9	72.1	62.5	68.8	69.7	71.4	67.3	816	4.03	202.500

DIARRHŒAL DISEASES.

The deaths from diarrhœal diseases in New Orleans, appear, in a measure, be related to the elevation of temperature, as they are most numerous the months of May, June and July, as will be shown by the following atistics:

BLE SHOWING DEATHS FROM DIARRHŒAL DISEASES, BY MONTHS, DURING THE YEARS 1869 to 1880, INCLUSIVE.

YEARS.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Death rate per 1000 per annum.	Population.
69	21	8	21	35	48	55	54	36	35	30	44	35	422	2.21	191,000
70	22	10	11	19	61	81	42	37	41	28	45	35	432	2 26	
71	26	16	31	64	38	67	46	39	27	27	45	26	452	2.36	
72	24	35	14	24	68	41	30	39	29	26	31	29	390	2.04	
73	20	27	34	108	238	56	71	30	30	34	45	31	724	3.79	
74	24	18	14	24	66	33	52	42	36	46	38	36	429	2.24	
75	48	16	11	18	38	81	62	26	38	20	20	21	399	1.90	
76	18	14	21	17	47	62	54	27	37	35	29	25	386	1.83	210,000
77	23	9	21	32	54	101	49	37	32	27	44	20	449	2.13	
78	16	15	15	32	55	52	39	57	29	24	27	24	385	1.83	
79	23	13	17	28	42	53	57	21	21	26	22	22	345	1.64	
80	29	15	17	20	45	56	32	26	23	25	21	22	331	1.53	216,000
Total	294	196	227	421	800	738	588	417	378	348	411	326	5144	....	.....
Average	24.5	16.3	18.9	35 0	66 6	61.5	49.0	34.7	31.5	29.0	34.2	27.2	428	2.11	202,500

ELATIONS OF MILK AND ITS ADULTERATIONS TO THE DIARRHOEAL DIEASES OF CHILDREN.

From the fact that persons may be entirely sustained upon a diet of milk, an indefinite period, it is evident that this fluid must contain all the ele- nts necessary for the growth and sustenance of the human body; and emical research has shown that milk contains the three classes of prin- oles which are required for human food, namely: the albuminous or nitro- nous, the oleagenous and the saccharine. Milk consists of water holding solution casein or cheese, sugar of milk, various salts, and in suspension, ty matters, in the form of myriads of semi-opaque globules, to which the lor and opacity of milk is due.

As milk is the only article supplied by nature which combines all the elements requisite to secure healthy nutrition in a form suited to the young animal; and as the entire human race after birth and for an indefinite period ranging from one to two years is dependent upon milk for its support and existence, it is evident that it should not be omitted from the category of the necessaries of life, to which the attention of those charged with the conduct of the sanitary affairs of this city and State should be earnestly and efficiently directed.

The vast importance of regulating the milk supply of New Orleans, is clearly demonstrated by the great prevalence and frightfully destructive effects of such infantile diseases as cholera infantum, tabes mesenterica convulsions, teething and infantile debility.

The fearful mortality which occurs in this city amongst "*teething*" children and infants, is shown by the statistics of the following table:

TABLE GIVING THE DEATHS IN THE CITY OF NEW ORLEANS DURING A PERIOD OF TWENTY-SEVEN YEARS (1847-1880) FROM INFANTILE DISEASES (CHOLERA INFANTUM, TABES MESENTERICA, CONVULSIONS, TEETHING AND DEBILITY).

YEAR.	Cholera Infantum.	Tabes Mesenterica.	Convulsions.	Infantile Convulsions.	Teething.	Infantile Debility.	Total.
1847	31	50	176	....	96	....	3
1849	40	1	314	....	102	65	5
1850	73	19	351	....	137	76	6
1853	75	21	465	....	143	100	8
1856	115	162	10	345	189	74	8
1857	91	125	12	375	151	69	8
1858	108	201	7	521	189	75	1
1859	88	176	7	367	202	83	9
1860	108	184	26	409	154	91	
1863	68	200	29	265	104	45	
1864	80	194	12	296	214	80	
1865	79	213	18	275	164	68	
1866	88	204	50	236	88	58	
1867	100	161	68	270	107	54	
1868	85	125	222	50	56	17	
1869	56	159	74	215	63	29	
1870	65	182	22	206	78	52	
1871	84	178	18	200	88	161	
1872	52	258	19	227	90	163	
1873	118	238	13	256	98	140	
1874	80	261	11	203	70	112	
1875	100	185	14	233	80	120	
1876	73	191	18	140	80	102	
1877	113	150	69	132	99	100	
1878	77	166	88	175	86	150	
1879	98	163	15	122	86	184	
1880	89	144	5	172	88	161	
Total	2236	4311	2133	5690	3102	2429	1

During a period of twenty-seven years, cholera infantum, tabes mesenterica, convulsions, teething, and infantile debility, diseases peculiar to children and infants, destroyed in the city of New Orleans, 19,901.

On the other hand, during the same period, yellow fever occasioned the following deaths: 1847, 2804; 1849, 769; 1850, 107; 1853, 7849; 1856, 1857, 199; 1858, 4855; 1859, 92; 1860, 15; 1863, 2; 1864, 6; 1865, 1; 1 185; 1867, 3107; 1868, 3; 1869, 3; 1870, 587; 1871, 54; 1872, 39; 1873, 2 1874, 11; 1875, 61; 1876, 42; 1877, 1; 1878, 4056; 1879, 19; 1880, 2; t deaths from yellow fever during the twenty-seven years specified, 25,17

The deaths from yellow fever during the twenty-seven years speci exceeded those caused by the diseases of infancy, 5271; or in other wo were only a little less than one-fifth greater. By what process of reason and for what ends does the medical profession at large, and the Boar Health of the State of Louisiana in particular, neglect the considera

19,901 deaths from infantile diseases, and concentrate all available kill and knowledge upon a disease which commits its ravages only at mparatively long intervals?

All diseases and all causes of deaths should be equally considered, by ose charged with the conduct of the sanitary affairs of the city and tate.

It is of course impossible to determine the exact proportion of the 19,901 fants who perished from improper nourishment and from adulterated ilk, but that improper and insufficient food as well as crowding, imperfect utilation, and exhalations from foul privies and filthy canals and gutters, ter as important factors in the production of the grand results, will not denied.

It is not our purpose at this time, to enter into a minute description of e methods of analyzing milk microscopically and chemically; and even it be granted that nothing but water has been added to dilute the milk, is water may itself have been derived from a foul source, and in the outeaks of diphtheria, scarlet fever and typhoid fever, the medical inspector ould not neglect a single link in the chain of evidence as will be shown the following example: Fever once appeared in a large public schools, d as no mode of the entrance of the poison could be discovered it was at st supposed to have arisen spontaneously. The water supply on analis proved to be pure. The milk was supplied from two or three sources, d was not complained of, but making an analysis of the milk it was und to have been manipulated with water. An analysis of the water m each of the farms, whence the milk was derived, was made, and one these waters was discovered to be polluted with animal excrement, ilst the other two waters were undoubtedly pure. On visiting the dairy m possessing the polluted water supply, it transpired that the closet d well were in affectionate proximity, and that the former had recently eived the specific poison of typhoid fever from one of the laborers. If lk under such circumstances, should not evince by chemical examinan, any decided departure from the usual state of the secretion, due reard being paid to its variation in composition, by reason of the age and od of the cow, time after calving, weather, etc., it must not be concluded at the poison of the disease has not been communicated to the milk rough the medium of water, for there is every reason to believe, that the allest quantity of water containing the specific poison, such as may be roduced by merely rinsing the milk cans, is sufficient to infect a large antity of milk.

In outbreaks of scarlet fever, no ray of light should be neglected, how er feeble, in tracing the mode in which this disease is disseminated, and most rigid and careful examination by means of the microscope should instituted, between milk that has been exposed to infection—as for exple, from being stored within a few yards of persons suffering or revering from this disease—and the milk of the same animal that has been us endangered, with the object of discovering epithelial scales, for the ison of scarlet fever would seem to be mainly distributed through the air the aid of the dust of the skin to which it attaches itself.

MALIGNANT OR ASIATIC CHOLERA.

It would be foreign to our purpose to enter fully into the history of this reign pestilence, which has at various times reached the shores of Louisa *from the cities of Europe, across the waters of the Atlantic Ocean and Gulf of Mexico. Asiatic cholera has played no insignificant part in the and carnival of disease and death.*

In 1832, Asiatic cholera, in conjunction with yellow fever, swelled the mortality of New Orleans to 8099, in a population of 55,084; and marked this year as the most terrible in the annals of this city, the death rate reaching the enormous proportions of 147.10 per 1000 inhabitants. In 1832 the inhabitants of New Orleans were more than decimated, for more than one-seventh of their number was destroyed chiefly by Asiatic cholera and yellow fever, acting in addition to the usual endemic and epidemic diseases.

The Charity Hospital affords the following statistics of Asiatic cholera: 1848, cases 662, deaths 396; 1849, cases 1813, deaths 1122; 1850, cases 724, deaths 530; 1851, cases 382, deaths 292; 1852, cases 485, deaths 358; 1853, cases 194, deaths 115; 1854, cases 478, deaths 352; 1855, cases 351, deaths 225; 1856, cases 32, deaths 11; 1857, case 1, death 1—total (1842-1860, eighteen years), cases 5122, deaths 3402; per cent of deaths 66.4.

During the sixteen years following the American civil war, New Orleans has been comparatively exempt from Asiatic cholera, as shown by the statistics of the Charity Hospital; thus, in 1866, cases 300, deaths 237; 1867 cases, 94, deaths 70; 1868, cases 15, deaths 9; 1873, cases 34, deaths 27—total during sixteen years (1864-1880), cases 443, deaths 343; per cent of deaths, 77.4.

There were received into the Charity Hospital during thirty-four years (1842-1880) 5565 cases of Asiatic cholera, of which 3745 terminated fatally, giving a rate of mortality of 67.3 per cent.

The first authentic records which we have of the appearance of Asiatic cholera in New Orleans relate to the year 1832, when it occasioned 43[illegible] deaths out of a total of 8090 deaths from all causes; yellow fever claimed only 400 deaths in this most pestilential year in the annals of this city. The disease lingered through 1833, when it claimed 1000 victims out of a total of 4976 deaths. In 1832 the population of New Orleans was 55,084, and of this number more than one-seventh perished, giving a mortality from all causes of 147.10 per thousand inhabitants, and from Asiatic cholera 78.78, and from yellow fever 7.20. Cholera appeared again in 1848 and destroyed 1646 inhabitants, and continued its ravages for several years, the deaths being: 1849, 3176; 1850, 1448; 1851, 430; 1852, 1329; 1853, 585; 1854, 883; 1856, 43; 1857, 24; 1858, 26; 1859, 27; 1860, 30; 1861, 12; 1863, 1864, 5; 1865, 9; total deaths from Asiatic cholera during a period of nineteen years (1844-1865) 9678. Cholera appeared again in 1866, and continued its effects for three years. The deaths were as follows: 1866, 1294; 1867, 581; 1868, 129; 1869, 4; 1870, 3; 1871, 6; 1873, 142; 1864, 6; 1875, 4; total deaths during fifteen years (1866-1880) 2169.

It is evident, from the preceding statistics, that during a period of thirty-four years (1844-1880) Asiatic cholera destroyed 11,847 of the citizens of New Orleans; and, if we add to this number the deaths occasioned by the disease in 1832 and 1833, we have a grand total of 17,187 deaths.

Those charged with the conduct of the sanitary affairs of the city and State should view these 17,187 dead citizens as victims to a foreign and exotic pestilence, imported from the shores of Europe in the cargoes and passengers of ships.

The State of Louisiana can protect herself and the entire valley only by maintaining, at all times and under all circumstances, a vigilant quarantine at the mouth of the Mississippi river; and all parties who, under the guise of promoting commerce, endeavor to destroy an efficient quarantine, should be regarded as *public enemies*.

It is probable that the mortality occasioned by Asiatic cholera was far in excess of these figures, for we find upon careful examination of

mortuary records of New Orleans, that during a period of thirty-four years (1844-1880), the deaths from bowel affections were as follows: Cholera Morbus, 889; cholera infantum, 2408; teething, 3430; gastritis, 743; enteritis, 6915; dysentery, 7097; diarrhœa, 8289; total from these diseases, 29,771.

During the same period of thirty-four years, yellow fever occasioned 28,739 deaths.

It is evident, therefore, that the so-called ordinary bowel affections, diarrhœa, dysentery, cholera morbus, enteritis, gastritis, and teething) actually caused a larger number of deaths in New Orleans than yellow fever. And if we add the 11,847 deaths caused by Asiatic cholera, we have a grand total of 41,618 deaths from those diseases in which derangements of the gastro-intestinal mucous membrane forms the most prominent symptom.

The continuous and fearful mortality from this class of diseases, must be diminished by improved domestic and general sanitation. The great essentials of sanitary reform for the diminution of the number and fatality of the cases of bowel affections in New Orleans must be based upon—

1. Thorough drainage of the entire parish of Orleans, and especially that portion occupied by the city of New Orleans.
2. The prompt removal of all fœcal matters out of the limits of the city;
3. The daily removal of garbage;
4. Systematic and thorough cleansing of private premises, public buildings, factories, markets, streets and gutters;
5. The filling up with sand and gravel of all low lots.

SCARLATINA, MEASLES, WHOOPING COUGH AND DIPHTHERIA.

During a period of thirty-four years (1844-1880); scarlatina occasioned 2066 deaths; measles, 1589; whooping cough, 1026; diphtheria, 1925; total from this class of diseases, 6606.

Without doubt, much may be accomplished by certain hygienic measures, and by disinfection, for the mitigation and limitation of this class of diseases.

VENEREAL DISEASES—SYPHILIS, GONORRHŒA AND ORCHITIS.

The mortuary records of New Orleans like those of most American cities, affords but imperfect data, for the determination of the effects of venereal diseases upon the general mortality of population. The shame and disgrace which attaches to the loathsome results of promiscuous intercourse, often leads to the concealment of the true cause of death, by those immediately concerned in the framing of the death certificate. In addition to this fact, it is well known that the poison of syphilis, often induces profound constitutional derangements, which may not only be transmitted to the offspring to the third and fourth generations, but may also modify, and intensify various diseased processes.

The only available statistics to show the prevalence of venereal diseases in New Orleans, are those afforded by the Charity Hospital.

During a period of eighteen years (1842–1860), the number of cases of Syphilis in the Charity Hospital was 6767, of which 63 died, mortality 0.9 per cent; sixteen years (1864–1880) cases 5761, deaths 96, per cent 1.6. Total cases syphilis, 12,528, total deaths from this disease 159 per cent 1.2 in the Charity Hospital, during a period of thirty-four years, 1842–1880. What portion of the 11,721 cases of rheumatism, with 84 deaths, or of the

10.950 cases of phthisis pulmonalis and 5609 deaths (51.2 per cent) were either directly or indirectly connected with constitutional syphilis, cannot be determined.

During the same period (1842–1880) the cases of gonorrhœa numbered 2392 with four deaths, and of orchitis 794 cases and three deaths.

It would appear from these statistics that venereal diseases have occasioned no marked mortality in New Orleans, but, nevertheless, they have furnished 15,714 cases to the Charity Hospital, which have been treated at the expense of the taxpayers of this city. We have no data by which to determine the actual cost of the treatment of venereal diseases in the Charity Hospital; but if the actual expenses attending the treatment (food clothing, medicine, etc,) of each case be fixed at the moderate sum of $10 (ten dollars), then we have a grand amount of $157,140, expended in thirty four years for venereal diseases alone.

This estimate is below, rather than above the truth; for we find that during the same period of thirty-four years that 10,513 cases of ulcer with 48 deaths, were treated in the Charity Hospital.

We know from experience that a large proportion of the ulcers treated in the Charity Hospital have been, either directly or indirectly, the result of syphilitic taint. A portion also of the 2794 cases of abscess, with 9 deaths, must also be referred to the action of venereal poisons.

It is well known that chronic ulcers and constitutional syphilis are the most tedious of all diseases which fall to the lot of the hospital physician and that, in proportion to their numbers, they consume far more of the public charity than such diseases as yellow fever, cholera, and the acute forms of malarious diseases.

It would not be extravagant to assert that the treatment of venereal diseases in the Charity Hospital during the past thirty-four years has cost the taxpayers of the city and State between $300,000 and $400,000.

These facts represent but a portion of the expense, mischief and suffering caused by the venereal poison or poisons, for the statistics relate only to the poorer classes, who are without the means of obtaining proper medical attendance or suitable medicines, food and accommodations.

It would be just to estimate the number of cases of venereal disease which never enter a hospital as at least five times as numerous as those recorded upon the books of the Charity Hospital.

Without doubt, vast numbers of visitors, strangers, mercantile and marine agents, and seamen from all parts of the globe, contract syphilis and gonorrhœa in New Orleans, as well as in all other large cities.

The existence of venereal diseases in this and in all other cities in the and other countries, must be recognized by those charged with the control of the sanitary affairs.

No form of quarantine has yet been devised which can prevent the spread of venereal diseases, but much good may be accomplished by the institution of a proper system of medical inspection and treatment, and police regulation, of the great sources of these diseases, namely, *Prostitutes.*

It would be foreign to our purpose to elaborate a plan for the proper registration, restriction to certain prescribed limits, and medical inspection and treatment of prostitutes; but this subject is worthy of the careful consideration of His Excellency the Governor and the General Assembly, and the municipal authorities of the cities and towns of Louisiana.

Prostitution has not yet been abolished by the fulminations of the pulpit, the denunciations of the press, and the stern enactments of the laws

hat prostitution exists, is a fact to be recognized; and that the prostitute one of the manifestations of humanity, even in this enlightened, advanced nd civilized age, equally demands the recognition and earnest attention of he wise and humane legislator.

Good will be accomplished by the enactment of such laws as will restrain ce within the smallest possible limits, and at the same time, by medical spection, treatment and isolation, reduce the most loathsome diseases to he lowest practicable minimum.

YPHUS OR SHIP FEVER, AND TYPHOID OR ENTERIC FEVER.

It is not our intention, upon the present occasion, to enter upon a minute story of continued fevers, and show how they have devastated at various mes the fairest cities and most populous countries of Europe; and how, en in modern times, they have followed in the wake of great armies, and flicted untold damage alike upon the victor and the vanquished.

A volume might be written upon the birth of the fearful typhus in the ud hovels, and amongst the oppressed and starving poor of Ireland, and ungary and Poland; but whatever may be our sympathies for these ruggling people, our present duty and our present inquiry, relates to the eat city of New Orleans, the commercial emporium of the Mississippi alley.

It has been asserted that typhus and typhoid fevers are unknown in New rleans, and elaborate theories have been built upon this false premise; d learned arguments by learned and accomplished physicians have been unched against systems of underground sewerage, and even against the ceived theory that filth and excrements, when carefully hoarded in our rds and under our houses, may prove detrimental to human health. But the facts.

TYPHUS, OR SHIP OR FAMINE FEVER IN NEW ORLEANS.

We find the following important data, after careful examination and con- lidation of the records of the Charity Hospital of New Orleans, during a riod of eighteen years (1842-1860) preceding the recent civil war. There re treated in the Charity Hospital in New Orleans, 7220 cases of ship or phus fever, of which 1301, or 18 per cent, proved fatal; while during the xteen years succeeding the civil war (1864-1880) only two cases, both of ich proved fatal, were treated in this hospital.

Surely, this is a very remarkable fact. Truly, the prevalence of typhus ver during the eighteen years preceding our civil war, and its almost total sence in the sixteen years following the great civil convulsion, can be ferred to well-known causes.

First, typhus fever was imported to New Orleans by means of the emi- ant ships, which bore to these hospitable shores the fever and famine- icken and oppressed inhabitants of Ireland.

Previous to the year 1847, typhus fever does not appear to have made y serious lodgment in the city of New Orleans, although it had been com- itting its ravages in Europe for centuries before. Thus, in 1841, no case typhus fever was entered on the records of the Charity Hospital, nor in 42. In 1843, we find 9; in 1844, 4; in 1845, no case; in 1846, no case; t in 1847, we find the record of 1045 cases; in 1848, 1383; in 1849, 891; d 1850, 1044.

The disease introduced in 1847, both from Mexico (by the United States oops) and from Europe from the fever-stricken and starving districts of eland, raged as an epidemic in this city for several years.

We find the following mortality occasioned by typhus fever in New Orlean for the respective years: 1847, 154; 1848, 164; 1850, 199; 1853, 103; 1856, 2 1857, 8; 1858, 20; 1859, 7; 1860, 10; 1861, 5; 1863, 9; 1864, 11; 1865, 5; 186 12; 1867, 23; 1868, 5; 1869, 5; 1870, 13; 1871, 4; 1872, 4; 1873, 5; 187 2; 1875, 2; 1876, 2; 1877, 1; 1878, 23; 1879, 0; 1880, 1.

The following practical conclusions may be drawn from the precedin facts in the medical history of New Orleans:

1. Typhus fever was imported into New Orleans in 1847, and prevail for several years thereafter, causing the death of about 1500 of the inha itants of New Orleans. The disease was confined chiefly to the poor a ill-fed, as the majority of the deaths occurred in the wards of the Chari Hospital.

2. Quarantine is essential to the protection of New Orleans from t introduction of typhus fever; and to be effective it must be perpetu The public mind has been so excited and manipulated upon the subject yellow fever that, in the Mississippi Valley, it has become synonymous w quarantine. The quarantine against yellow fever may be practica limited to six months in the year, embracing that peculiar thermic con tion favorable to its lodgment and spread; but typhus fever is not t limited by climatic changes, but is often developed with most destruct effects in the dead of winter, and may at any time and any season be tra ported across the ocean in ships.

3. As President of the Board of Health I have held that the quaran of Louisiana, at the mouth of the Mississippi River should be maintai in an effective condition at all times and under all conditions, and that inspection of vessels by the quarantine physicians should at all seas both summer and winter, be thorough. It is natural that commercial mercantile men should oppose and endeavor to defeat all measures w appear in any manner to diminish their business or put apparent obst tions in the way of the continuous and rapid accumulation of money and tal; but in the true light of public good and of substantial advancem the exclusion of foreign pestilence, the preservation of the public he is the only true road to permanent prosperity.

4. No mere sanitary measures within the limits of the city of New leans, will in the absence of an efficient system of inspection and qu tine, exclude such infectious and contagious diseases as typhus fever small-pox.

5. Typhus fever introduced into New Orleans tends gradually t come extinct; this result should be attributed to the better food, l living, or ventilation of the mass of the inhabitants of this city.

6. The establishment of an extensive system of street railroads, d the past twenty-five years in New Orleans, has without doubt pro the health as well as the comfort of the people, by scattering the dwe upon a far greater area and thus promoting ventilation, and preve crowding.

TYPHOID FEVER.

Typhoid, or enteric fever has been present in New Orleans for an nite period, as will be shown by the following statistics: The num cases of typhoid fever entered in the Charity Hospital in 1841 w 1842, 22; 1843, 4; 1844, 80; 1845, 139; 1846, 195; 1847, 457; 1849, 7

During a period of eighteen years, 1842-1860, 3144 cases of typhoid were treated in the Charity Hospital, 983 or 31.2 per cent of which nated fatally.

During a period of sixteen years, 1864-1880, following the civil wa 377 cases, with 180 deaths, 47.7 per cent of typhoid fever were e upon the records of the Charity Hospital.

During thirty-four years, 1842-1880, 3521 cases and 1163 (33 per cent ortality) deaths were entered upon the records of the Charity Hospital caused by typhoid fever.

This disease in like manner with typhus fever has diminished since the ssation or great diminution of foreign immigration to New Orleans, which s characterized the close of the great civil convulsion of 1861-1865.

These two diseases, typhus and typhoid fever, figure upon the records of e Charity Hospital during the past thirty-four years, with 10,743 cases, d 2466 deaths.

The mortuary records of New Orleans show the following deaths from phoid, or enteric fever, for the respective years: 1845, 70 deaths from phoid fever; 1847, 233; 1849, 178; 1850, 103; 1853, 146; 1856, 108; 1857, ; 1858, 189; 1859, 214; 1860, 163; 1861, 102; 1863, 257; 1864, 268; 1865, 9; 1866, 116; 1867, 119; 1868, 58; 1869, 63; 1870, 80; 1871, 71; 1872, 67; 73, 57; 1874, 95; 1875, 57; 1876, 53; 1877, 69; 1878, 74; 1879, 33; 1880, 52.

It is evident from the preceding statistics that New Orleans has not been empt from typhoid or enteric fever.

It appears to be true, however, that New Orleans, and in fact the entire uvial portion of Louisiana, suffers less from typhoid fever than more ele- ted portions of our country.

This comparative exemption has been referred, by some writers, to the sence of underground sewers in New Orleans; but it would rather ap- ar to be due to those peculiar climatic conditions which do not favor the neration and propagation of the typhoid poison.

From the preceding facts, we may draw the following

PRACTICAL CONCLUSIONS.

1. Typhus, or ship fever, can be transferred from one country to another, d is capable of reproducing itself and spreading in populous towns or ies; more especially amongst the poorer classes in crowded houses.

2. Typhoid fever appears to be closely related to climate and soil, and in me instances has been traced to such local causes as the contamination drinking water with fœcal matter; and whilst facts exist to show that der certain circumstances it may become infectious, this disease is not ssessed of contagious qualities to an equal degree with typhus fever.

3. Both typhus and typhoid fever should be embraced in any system of aritime quarantine.

4. The chief means for preventing or arresting typhus or typhoid fever, e free ventilation, full supplies of pure drinking water, abundance of holesome food, and the prompt removal of garbage and fœcal matters.

RISONS, POLICE STATIONS AND CHARITABLE INSTITUTIONS AS SOURCES OF DISEASE.

Shortly after my election as President of the Board of Health in April, 80, I directed the earnest attention of this honorable body to the condi- on of the prisons, police stations, Insane Asylum, Boys' House of Refuge d Charity Hospital. Again, in the early part of 1881, I agitated this estion and brought the attention of the Grand Jury of the parish of Or- ns, prominently to the condition of the Parish Prison, police stations d Insane Asylum. Other matters, as the neglected and foul condition of e drainage canals were also urged upon the consideration of the Grand ry.

I have reason to believe that the agitation of important questions relating to the physical, mental and moral welfare of those accused and convicted of crimes—the innocent as well as the guilty—resulted finally in the establishment of a Commission charged with the investigation of all matters relating to the conduct of prisons, houses of correction and asylums. It is confidently hoped that good will result from the labors of the philanthrophic gentlemen composing the honorable commission.

POLICE STATIONS.

The attention of the Board of Health, and of the administrators of police and public building, have been directed to the structure and conduct of the police stations; to the want of sanitation; to the foul practice of receiving the discharges from the stomach and bowels of prisoners confined in these "dungeons" into open buckets, which are allowed during the entire night to exhale their noxious gases in these confined, badly ventilated cells.

PARISH PRISON.

The discussion of prison discipline and prison reform in New Orleans would cover far more ground than can be embraced in this report. It has engaged my earnest attention, and upon more than one occasion has the Parish Prison of Orleans been thoroughly and carefully investigated

STATEMENT OF ADMISSIONS AND DEATHS IN PARISH PRISON. PER MONTH. FOR TH YEARS 1856-60.

MONTHS.	1856.				1857.				1858.				1859.								1860.						Tota
		Died of				Died of				Died of				Died of								Died of					
	Admitted.	Stabbed.	Not Stated.	Total.	Admitted.	Fracture of Skull.	Not Stated.	Total.	Admitted.	Yellow Fever.	Intemperance.	Executed.	Total.	Admitted.	Pneumonia.	Diarrhœa.	Phthisis.	Intemperance.	Jaundice.	Executed.	Total.	Admitted.	Pneumonia.	Typhoid Fever.	Intemperance.	Executed.	Total.	Admitted.
January	49	..	..	..	225	..	..	..	653	..	..	..	..	580	1	..	..	..	..	..	1	673	..	..	..	2	2	21
February	74	..	..	..	222	..	1	1	555	..	..	1	1	530	..	..	..	..	..	..	..	561	..	..	..	..	..	19
March	123	..	..	..	229	..	..	..	713	..	..	2	2	602	..	1	..	..	..	1	2	620	..	..	..	..	..	22
April	239	..	..	..	172	..	..	..	558	..	1	1	2	503	..	..	..	..	..	..	..	519	..	..	..	..	..	19
May	137	..	..	..	228	..	..	..	416	..	..	..	..	569	..	..	..	..	..	..	..	359	..	..	..	..	..	17
June	171	1	..	1	245	..	..	..	392	..	..	..	..	455	..	..	1	1	..	..	2	368	..	..	1	1	2	16
July	239	..	..	..	231	..	1	1	513	..	..	2	2	463	..	..	..	..	..	..	..	849	1	..	3	..	4	28
August	173	..	..	..	226	..	..	..	366	..	..	..	..	353	..	..	..	..	..	..	..	851	..	..	1	..	1	15
September	210	..	..	..	207	..	1	1	449	2	1	..	3	457	..	..	..	..	..	..	..	789	..	..	..	..	..	27
October	167	..	2	2	178	1	..	1	380	2	..	..	2	432	..	..	..	..	..	..	..	894	..	..	..	..	..	28
November	163	..	..	..	341	..	..	..	445	1	..	..	1	620	..	..	..	2	1	..	3	950	..	..	..	..	..	2
December	205	..	..	..	627	..	..	..	558	..	..	..	..	622	..	..	..	..	..	..	..	1079	..	1	..	..	..	3
Totals	1950	1	2	3	3124	1	3	4	5998	5	2	6	13	6186	1	1	1	3	1	1	8	8512	1	1	5	3	10	25

STATEMENT OF ADMISSIONS AND DEATHS IN PARISH PRISON, PER MONTH, FOR THE YEARS 1866-70.

MONTHS.	1866.				1867.							1868.			1869.			1870.			Totals.	
	Admitted.	Died of			Admitted.	Died of						Admitted.	Died of		Admitted.	Died of		Admitted.	Died of		Admitted.	Died.
		Cholera.	Phthisis.	Total.		Yellow Fever.	Intemperance	Phthisis.	Cholera.	Not stated.	Total.		Pneumonia.	Total.		Small-pox.	Total		Not stated.	Total.		
January	553	1	1	2	560							623			926	1	1	707	1	1	3,369	4
February	351				554							610			903			678	1	1	3,069	1
March	304				523		1	1			2	572			732			818			2,949	2
April	398				541							568			717			573			2.797	
May	524				499							527			653			756	1	1	2,959	1
June	461				653							475			731	1	1	353			2,673	1
July	401				660					1	1	606			727			467			2.861	1
August	422	2		2	693	1					1	888	1	1	697			523			3.223	4
September	380	3		3	528	3				1	4	811			661			420			2.800	12
October	402	1		1	474	1		1			2	720			653			399			2,648	3
November	515				562				2	2	4	816			622			368			2,883	4
December	527				600		2		1		3	732			807			451			3.117	3
Totals	5,238	12	1	13	6,847	5	3	2	3	4	17	7,948	1	1	8,829	2	2	6,513	3	3	35,375	36

From the preceding statistics the following points are worthy of note:

1. During five years preceding the civil war, 1861–1865, namely: 1856, 1857, 1858, 1859 and 1860, 25,770 persons were admitted into the Parish Prison of Orleans, and that of this number thirty-eight died within the walls of the Bastile. We have no means whatever to determine the number of deaths in the Charity Hospital among the dangerously wounded (stabbed, shot and maimed), poisoned and sick. It is, however, a fact of considerable importance in a sanitary point of view that in 1859 five of the prisoners died within the walls of yellow fever.

It has been affirmed that this disease has never invaded the Parish Prison and that its exclusion was due to two causes, namely: the isolation (quarantine) of the inmates, and the exhalation of ammonia from the excrement of the bats which inhabit the garret of the building in vast numbers, and also from the urine of the prisoners.

2. During five years following the civil war—1866, 1867, 1868, 1869 and 1870—35,375 prisoners were admitted within the walls of the Parish Prison of which thirty-six are said to have died. The five years following the war gave a richer harvest of prisoners, by the amount of nearly ten thousand.

During the five years preceding the civil war we find ten deaths credited to the hangman (*executed*). During the five years following the civil war we find not a single death in accordance with the mandates of the law.

Whilst the results of the civil war of 1861–1865 appeared to favor the increase of crime, they also appeared to relax the extreme rigors of the law. Cholera claimed twelve victims in 1866 and three in 1867, and yellow fever occasioned five deaths in 1867, and even small-pox invaded "*the sacred precincts*," and destroyed two of the unfortunate prisoners in 1869.

The subject of the physical, mental and moral treatment of prisoners in every prison, workhouse and institution for correction and reform, in every parish throughout the State of Louisiana, is worthy of the most serious consideration and investigation on the part of his Excellency the Governor, and the Senate and House of Representative of the State of Louisiana.

THE SICK, DESTITUTE POOR OF NEW ORLEANS.

Some estimate of the amount of unrelieved suffering endured by the destitute poor of New Orleans during sickness, may be formed by the view of the number of deaths occurring in the Charity Hospital and the various other public and charitable institutions, and more especially from the number of deaths recorded upon the certificates of the coroner.

Thus, during the months of January, February, March and April, the number of deaths occurring in charitable and public institutions was as follows:

DEATHS IN THE CHARITY HOSPITAL DURING THE MONTHS OF JANUARY, FEBRUARY, MARCH AND APRIL, 1881.

MONTHS.	Whites.	Colored.	Total by Months.
January	37	35	72
February	47	22	69
March	42	28	70
April	30	24	54
Totals	156	109	265

EATHS IN PUBLIC AND CHARITABLE INSTITUTIONS DURING THE MONTHS OF JANUARY, FEBRUARY, MARCH AND APRIL, 1881.

YEARS.	Different Institutions.	Number of Deaths.
-1	Small-Pox Hospital	1
-1	Hotel Dieu	20
-1	Touro Infirmary	8
-1	St. Vincent's Infant Infirmary	13
-1	Insane Asylum and Louisiana Retreat	19
-1	Parish Prison	10
-1	Orphans' Asylum	5
-1	Other Institutions	28
Totals		104

QUESTS HELD BY THE CORONER DURING THE MONTHS OF JANUARY, FEBRUARY MARCH AND APRIL, 1881.

MONTHS.	Whites.	Colored.	Total by Months.
nuary	44	62	106
bruary	28	44	72
arch.	47	49	96
ril	33	51	84
Totals	152	206	358

It is shown by the preceding table that the total deaths in New Orleans ring the first quarter of 1881, in charitable and public institutions and on Coroner's certificate numbered 727. If the same ratio of deaths to opulation should hold during the remainder of the year 1881, then the ortality for the entire year would be as follows:

haritable and Public Institutions	1107
oroner's Certificates	1074
Total, as estimated for 1881	2181

DEATHS IN THE CHARITY HOSPITAL DURING THE YEAR 1880.

MONTHS.	Whites.	Colored.	Total by Months.
nuary	44	23	67
bruary	33	18	51
arch	26	13	39
pril	43	22	65
ay	23	23	46
ne	31	16	47
ly	27	19	46
gust	29	19	48
ptember	32	15	47
ctober	40	21	61
ovember	56	20	76
ecember	38	26	64
Totals	422	235	657

EATHS IN PUBLIC AND CHARITABLE INSTITUTIONS DURING THE YEAR 1880.

YEARS.	Different Institutions.	No. of Deaths.
880	Small-Pox Hospital	1
880	Hotel Dieu	37
880	Touro Infirmary	10
880	St. Vincent's Infant Infirmary	32
880	Boys' House of Refuge	1
880	City Insane Asylum and Louisiana Retreat	23
880	Parish Prison	7
880	Orphans' Asylum	14
880	Other Institutions	54
Totals		179

INQUESTS HELD BY THE CORONER DURING THE YEAR 1880.

MONTHS.	Whites.	Colored.	Total by Months.
January	28	49	77
February	35	38	73
March	27	42	69
April	40	39	79
May	32	58	90
June	29	56	85
July	47	37	84
August	42	61	103
September	33	45	78
October	41	52	93
November	46	61	107
December	48	64	112
Total	448	602	1050

From the preceding tables we obtain the general results that, during the year 1880, the deaths in the Charity Hospital and other public and charitable institutions numbered 836; of those recorded on coroner's certificate 1050; total, 1886 deaths.

Eighteen hundred and eighty-six deaths occurred among the poor and friendless of New Orleans, during the year 1880, out of a grand total of deaths from all causes of 5623. In other words, the deaths among those who availed themselves of public charity, or who were too poor to command medical attention, constituted about one-third, or thirty-three per cent of the deaths from all causes.

It is worthy of note that 1050 *deaths were registered upon the Coroner's certificate; that is, one in about five (5.35) of those who died in New Orleans during* 1880 *perished without any known or recognized medical attention or servi*

It is also worthy of note that the deaths upon Coroner's certificat among the colored population greatly outnumber those among the white in the proportion of 602 among the former to 448 among the latter; that the number of Coroner's inquests were, relatively to the population, more than six times more numerous among the colored population.

Such facts should arrest the attention and engage the action and earnest efforts of philanthropists.

Upon mature deliberation the following measures appear to afford the best means of mitigating a portion, at least, of the suffering among the destituted sick poor of New Orleans:

First—The employment, at a reasonable compensation, of one or more physicians in each ward, whose duty it shall be to attend to the sick poor.

Second—The establishment of one or more depots of drugs in each ward under the charge of competent druggists, to be dispensed upon the requisition and certificate of licensed physicians.

In the present condition of the public finances, both City ond State, it is not probable that any steps can be taken to accomplish these results by legislation; but it may be hoped that the good and philanthropic may be moved to assist in accordance with their means and benevolent impulses.

INFLUENCE OF RACE UPON THE RATE OF MORTALITY IN NEW ORLEANS.

In the consideration of the relations of endemic and epidemic diseases to the mortality of special cities and countries, it is essential that the death-rate of the distinct races should be determined. In New Orleans we have two great divisions into the white and black, or colored races. The latter terms are almost absolutely synonymous with the negro races. The mortality of New Orleans has not as yet been perceptibly affected by the copper-colored immigrants of Asia.

From the following tables we gather that, during the series of the one years embraced in the period extending from 1845-1881, inclusive

erage annual death-rate, per 1000 inhabitants, amongst the whites of w Orleans was 39.69, and amongst the black or colored race 47.13; and e annual death-rate for both whites and blacks, 41.41.

It is worthy of note that from 1845 to 1871, the still-born were included the total deaths. Notwithstanding the greater liability of the white ce to yellow fever, and the heavy mortality occasioned during epidemic ars; nevertheless the annual death-rate amongst the colored race for the tire series was 7.44 greater than that of the white race.

The rate of mortality in New Orleans has been materially affected by its idemics of yellow fever, and this movement has been due chiefly to the structive effects of this disease upon the white race. Thus in 1847, the ath-rate per annum, per 1000, was: whites 70.86, colored 37.08; 1853, hites 124.68, colored 48.98; 1867, white 56.79; colored 47.80; 1878, whites .08, colored 39.0. The year 1858, however was an exception to the rule, at in years of epidemics—yellow fever—the mortality is largely in excess the whites, for we find the total death-rate to be 72.70, whites 69.64, lored 89.37, per 1000 inhabitants.

If we exclude the year 1878, there has been a marked diminution of the ath-rate amongst both whites and blacks in New Orleans since 1867, or ring the past fourteen years, the mortality amongst the colored race, wever, is far higher than is comportable with an improved mental, moral, ysical and sanitary condition of this race.

We have the relative mortality of the white and black races presented the following table, embracing a series of years, from 1845 to 1881, in-sive:

VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, LA.

TABLE ILLUSTRATING COMPARATIVE MORTALITY OF THE WHITE AND BLACK RACES IN NEW ORLEANS, DURING A SERIES OF YEARS, 1845-1881, INCLUSIVE. CONSOLIDATED FROM THE RECORDS OF THE BOARD OF HEALTH, UNDER THE DIRECTION OF JOSEPH JONES, M. D.

YEARS.	Population of New Orleans.			No. of Deaths in New Orleans.			Death-rate per 1000, per annum.		
	Total.	White.	Colored.	Total.	White.	Colored.	Total.	White.	Colore
1845	114,442	79,698	34,744	2,783	2,001	782	24.32	25.10	22.
1847	120,890	88,530	32,360	7,499	6,274	1,225	62.03	70.86	37
1849	127,340	97,362	29,978	9,862	7,976	1,886	77.44	81.92	62.
1850	130,565	101,778	28,787	7,819	6,319	1,500	59 88	62.08	52
1852	138,187	110.342	27,845	8,693	7,499	1,199	62.90	67.91	43
1853	141,988	114,624	27,374	15,633	14,292	1,341	110.09	124.68	48
1856	153,431	127,470	25,961	5,200	4,274	926	33.89	32.98	35
1857	157,242	131,753	25,489	5,581	4,593	988	35.49	34.86	38
1858	161,053	136,036	25,017	11,710	9,474	2,236	72.70	69 64	89
1859	164,864	140,319	24,545	6,847	4,712	2,135	41.53	33.58	86
1860	168,675	144,601	24,074	7,341	6,070	1,271	43.51	41.99	53
1861	170,949	144,233	26,716	5,449	4,456	993	31.87	31.58	37
1863	175,497	143.497	32,000	7,258	5,353	1,905	41.35	37.30	59
1864	177,768	143.129	34,639	8 864	6,032	2.832	49.86	42.14	8
1865	180,043	142.761	37,282	7,020	4,756	2.264	38.99	33.31	60
1866	182,318	142.393	39,925	7,754	5,236	2,518	42.52	36.77	6
1867	184,593	142.025	42,568	10.096	8,066	2,030	54.69	56.79	4
1868	186.068	141,657	44,411	5,343	3,612	1.731	28 60	25.49	3
1869	189,143	141.290	47,853	6.001	3,857	2,144	31.73	27.29	4
1870	191,418	140,923	50,495	7,391	4,755	2,636	38.61	33 74	5
1871	193,412	142,695	50,717	6.059	3 890	2,169	31.32	27.26	4
1872	196,406	144,437	51,969	6.122	3,943	2,179	31.17	27.29	4
1873	198,900	146,179	52,721	7,505	4,794	2,711	37.73	32.79	5
1874	201,394	147,921	53.473	6,798	4.368	2,430	33 75	29.53	4
1875	203,888	149,663	54,225	6,117	3,934	2,183	30.00	26.28	4
1876	206,382	151,406	54,976	6,257	3,917	2 340	30.31	25.87	
1877	208,876	153,149	55,727	6,708	3,976	2,732	32.11	25.96	
1878	211,371	154,892	56,479	10,318	8,062	2,256	48.81	52.05	
1879	213,865	156,635	57,230	5,122	3,267	1,855	23.95	20.85	
1880	216,140	158,379	57,761	5,623	3,637	1,986	26.01	22.96	
1881	218,500	160.000	58,500	6.406	4,127	2,279	29.31	25.79	
Total	5,485,618	4,219.777	1,265,841	227,179	167,517	59,662	41.41	39.69	

The mortality from 1845 to 1871, inclusive, comprises "Still-born."

The mortality records from 1869 to 1876 give a certain number of deaths, "Color not stated." have been divided in the above table by estimating two-thirds to be white, and one-third colored.

The figures of "Population" are taken from the United States census of 1840, 1850, 1860, 1870 and and those of the intermediate years have been derived from these by calculation.

Population of 1881 is estimated.

COLOR—VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, LA., 1847-1881.

COLOR.	1847	1849	1850	1853	1856	1857	1858	1859	1860	1863	1864	1865	Total 12 Years.
Whites	6274	7974	6319	14292	4274	4593	10592	5781	5884	5015	6032	4688	81718
Blacks	1220	1888	1500	1341	926	988	1118	1066	1179	1735	2832	2231	18024
Not stated	5	.....	.....	.....	.....	.....	.....	.....	278	508	.....	101	892
Total	7499	9862	7819	15633	5200	5581	11710	6847	7341	7258	8864	7020	100634

COLOR.	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	Total 16 Years	Grand Total 28 Years.
Whites	4984	7866	3503	3757	4602	3782	3871	4739	4299	3869	3847	3976	8062	3267	3637	4127	72188	154906
Blacks	2392	1931	1676	2092	2560	2115	2143	2684	2395	2151	2305	2732	2256	1855	1986	2279	35552	53576
Not stated	378	299	164	152	229	162	108	82	104	97	105	.....	.....	.....	.....	.....	1880	2772
Total	7754	10096	5343	6001	7391	6059	6122	7505	6798	6117	6257	6708	10318	5122	5623	6406	109620	210254

SEX—VITAL MORTUARY STATISTICS OF NEW ORLEANS, LA., 1849-1881.

SEX.	1849	1850	1853	1856	1857	1858	1859	1860	1863	1864	1865	Total 11 Years.
Males	6458	4802	9765	3108	3245	7675	4193	4193	4405	4895	3846	56585
Females	3404	3017	5452	2092	2336	4035	2654	2654	2578	3739	2963	34924
Not stated	.....	.....	416	.....	.....	.....	.....	494	275	230	211	1626
Total	9862	7819	15633	5200	5581	11710	6847	7341	7258	8864	7020	93135

SEX.	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	Total 16 years	Grand total 27 years.
Males	4372	6239	2844	3275	4466	3530	3526	4396	3982	3416	3381	3650	6193	2969	3053	3593	62785	120370
Females	3052	3566	2292	2598	2838	2481	2568	3070	2798	2666	2623	3058	4125	2153	2570	2813	45271	80195
Not stated	330	291	207	128	87	48	28	39	18	35	253	.....	.....	.....	.....	.....	1564	2190
Total	7754	10096	5343	6001	7391	6059	6122	7505	6798	6117	6257	6708	10318	5122	5623	6406	109620	202755

AGES—VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, LOUISIANA, 1849-1881.

AGES.	1849	1850	1853	1856	1857	1858	1859	1860	1863	1864	1865	Total 11 Years.
Under 1 year	1232	1323	1954	1608	1568	1944	1609	1467	952	1365	1375	16397
From 1 to 2 years	903	937	1296	434	468	603	538	668	694	806	578	13053
From 2 to 5 years				337	475	1001	505	581	643	962	624	
From 5 to 10 years	342	249	499	155	205	365	326	322	279	595	446	3783
From 10 to 15 years	530	126	2085	71	117	293	153	115	140	255	194	6300
From 15 to 20 years		279		87	130	579	231	175	271	280	189	
From 20 to 25 years	1991	1342	4514	298	308	1539	445	400	782	803	650	16548
From 25 to 30 years				431	408	1486	549	602				
From 30 to 40 years	1603	1224	2093	730	768	2001	1025	956	725	780	728	12633
From 40 to 50 years	833	615	901	483	523	1040	762	701	595	717	649	7819
From 50 to 60 years	382	321	448	253	297	463	331	378	367	600	495	4335
From 60 to 70 years	192	191	206	131	155	216	196	216	216	358	301	2398
From 70 to 80 years	101	100	84	80	97	118	95	99	155	183	159	1270
From 80 to 90 years	48	44	40	55	38	45	51	47	84	110	66	628
From 90 to 100 years	20	19	18	20	18	11	21	23	37	38	34	259
100 years and upwards	3	1	1	2	6	6	10	3	14	21	12	79
Age unknown	1682	1048	1495	25	.....	.....	.....	587	1284	991	520	7633
Total	9892	7819	15633	5200	5581	11710	6847	7341	7258	8864	7020	93135

AGES.	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	Total 16 Years.	Grand Total, 27 Years.
Under 1 year	1524	1863	1331	1385	1587	1596	1367	1539	1396	1262	1193	1228	1260	1115	1247	1231	22224	38621
From 1 to 2 years	518	529	364	472	410	324	405	507	399	403	494	437	455	261	373	394	6745	27348
From 2 to 5 years	510	566	229	493	353	204	337	516	449	420	504	441	1523	227	388	390	7550	
From 5 to 10 years	360	491	152	201	180	126	162	299	251	274	273	208	693	132	211	240	4353	8136
From 10 to 15 years	172	253	90	105	149	108	114	153	123	139	138	170	288	97	115	150	2364	12175
From 15 to 20 years	244	466	132	146	253	153	170	188	224	203	200	272	416	127	129	188	3511	
From 20 to 25 years	1069	942	221	249	491	336	327	519	372	360	287	916	1549	520	281	334	13896	30444
From 25 to 30 years		1039	282	280	582	370	368	514	383	351	346				267	341		
From 30 to 40 years	991	1441	588	581	929	753	750	880	830	613	644	709	1392	588	580	684	12953	25586
From 40 to 50 years	737	946	488	570	754	667	675	775	740	630	637	757	977	594	601	705	11253	19072
From 50 to 60 years	520	604	386	445	559	509	529	603	579	519	536	571	706	426	534	638	8664	12999
From 60 to 70 years	333	344	266	276	348	320	365	404	467	424	420	445	466	439	449	576	6342	8740
From 70 to 80 years	147	163	136	133	189	166	220	215	227	230	261	273	313	313	234	337	3557	4827
From 80 to 90 years	51	70	62	45	64	74	62	77	86	78	99	99	121	105	131	131	1355	1983
From 90 to 100 years	19	12	22	30	24	16	34	38	26	21	29	52	44	46	63	42	699	1037
100 years and upwards	10	10	9	15	12	17	18	16	19	11	24					20		
Age unknown	549	357	585	575	509	320	219	262	227	178	172	30	115	32	20	5	4154	11787
			5213	6001	7391	6059	6122	7505	6798	6117	6257	6708	10318	5122	5623	6406	103620	202755

VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, 1881

DEATHS FROM THE PRINCIPAL CAUSES IN THE DIFFERENT NATIONALITIES, 1881—.CONSOLIDATED FROM THE RECORDS OF THE BOARD OF HEALTH, UNDER THE DIRECTION OF JOSEPH JONES, M. D.

NATIVITIES.	Yello Fever.	Malarial Fever.	Typhoid Fever.	Scarlet Fever.	Measles.	Diphtheria.	Diarrhœal Diseases.	Phthisis Pulmonalis.	Pneumonia.	Congestion of the Brain.	Sunstroke.	Bright's Disease.	Cancerous Diseases.	Suicide.	Small-pox.	Total.
Austria and Hungary		1	1					2	1							5
Belgium							1	1								2
British America			1					8	1		1					11
China								5		1						6
Denmark		1					2			1						4
France		10	3	1			17	46	4	5	5	5	7	5	1	109
Germany		36	3	2	2		35	63	21	17	6	5	21	6		217
Great Britan and Ireland		52	1				73	84	29	23	5	10	24	2		303
Greece													1			1
Holland		1														1
Italy		5	2													31
Louisiana		240	43	188	24	2	8	7	2	2		1	2			1989
Mexico			1			83	557	455	209	73	5	60	42	10		7
Norway and Sweden		1	1					2	1			1	1	1		7
Portugal								3	1	1						1
Russia								1								4
South America							4									1
Spain		2	3				1									11
Switzerland			1				2	9	3	1	1	2			1	24
United States (not Louisiana)		46	6	6			4	5		1						517
West Indies		1				6	88	203	54	28	10	30	29	8	3	13
						1	3	6	1	1						
Total		396	66	197	26	92	795	900	327	154	33	114	127	32	5	3264

INFLUENCE OF SEX UPON THE MORTALITY OF NEW ORLEANS.

In the following table, the relative mortality amongst the different sexes (males and females) in New Orleans, during a period of twenty-six years (1849–1881) is given. The per cent relates to the relations of deaths in the two sexes to the total deaths, and not to the population.

We observe that the mortality during the entire series of years has been relatively greatest amongst the males.

This is due to several causes: 1. The greater exposure of the male race to the changes of climate, and to violent deaths by accidents, by contagious and infectious diseases. 2. The large number of seamen and merchants frequenting New Orleans from all parts of the habitable globe. 3. The large number of paupers and sick laborers, transported from surrounding States to the Charity Hospital.

VITAL AND MORTUARY STATISTICS OF NEW ORLEANS—TABLE ILLUSTRATING THE NUMBER OF DEATHS, AND PERCENTAGE OF DEATHS, AMONG THE DIFFERENT SEXES (MALE AND FEMALE) IN NEW ORLEANS.

Year	Number of Deaths.			Per cent of Deaths.	
	Total.	Male.	Females.	Male.	Females.
1849	9862	6458	3404	65.5	34.5
1850	7819	4802	3017	61 4	38 6
1853	15633	9973	5660	63 8	36.2
1856	5200	3108	2092	59.7	40.3
1857	5581	3245	2336	58.1	41.9
1858	11710	7675	4035	65.5	34.5
1859	6847	4193	2654	61.2	38.8
1860	7341	4440	2901	60.4	39.6
1863	7258	4543	2715	62.6	37.4
1864	8864	5010	3854	56.5	43.5
1865	7020	3952	3068	56.3	43.7
1866	7754	4537	3217	58.5	41.5
1867	10096	6485	3611	64.2	35 8
1868	5343	2948	2395	55.2	44.8
1869	6001	3339	2662	55.6	43.4
1870	7391	4510	2881	61.0	39.0
1871	6059	3554	2505	58.6	41.4
1872	6122	3540	2582	57.8	42.2
1873	7505	4416	3089	58.8	41.2
1874	6798	3991	2807	58.7	41.3
1875	6117	3434	2683	56.1	43 9
1876	6257	3508	2749	56.0	44.0
1877	6708	3650	3058	54.4	45.6
1878	10318	6193	4125	60.0	40.0
1879	5122	2969	2153	57.9	42 1
1880	5623	3053	2570	54.4	45.6
1881	6406	3593	2813	.....	.....

INFLUENCE OF THE EPIDEMIC AND ENDEMIC CAUSES OF DISEASE AND DEATH UPON HUMAN LIFE AT THE DIFFERENT AGES OR PERIODS.

In the following table the mortality at different periods of life in New Orleans, for a series of years, has been calculated with reference to total mortality:

VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, LOUISIANA—1849 TO 1881.

TABLE ILLUSTRATING THE RELATIVE MORTALITY IN THE DIFFERENT PERIODS OF LIFE, CONSOLIDATED FROM THE ORIGINAL RECORDS OF THE BOARD OF HEALTH, UNDER THE DIRECTION OF JOSEPH JONES, M. D.

AGES.	1849	1850	1853	1856	1857	1858	1859	1860	1863	1864	1865	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	Average during 27 years.
Under 1 year	12.5	16.9	12.5	30.9	28.1	16.5	23.5	20.0	13.1	15.4	19.6	19.6	18.4	24.9	23.7	21.5	26.3	22.3	20.5	20.5	20.6	19.1	18.3	12.2	21.7	22.2	19.1	20.0
From 1 to 2 years	9.2	12.0	8.3	8.3	8.4	5.2	7.9	9.1	9.5	9.1	8.2	6.6	5.2	6.8	7.8	5.5	5.3	6.6	6.8	5.9	6.6	7.9	6.5	4.4	7.1	6.6	6.1	13.7
From 2 to 5 years				6.5	8.6	8.5	7.4	7.9	8.8	10.9	8.8	9.6	5.6	4.3	8.2	4.8	3.4	5.5	6.9	6.6	6.8	8.1	6.6	14.8	4.4	6.7	6.1	
From 5 to 10 years	3.4	3.2	3.2	3.0	3.7	3.1	4.7	4.3	3.9	6.7	6.3	4.6	4.9	3.0	3.3	2.4	2.1	2.6	4.0	3.7	4.5	4.3	4.6	6.7	2.6	3.8	3.8	3.9
From 10 to 15 years	5.3	1.6	13.3	1.4	2.1	2.5	2.3	1.6	1.9	2.9	2.7	2.2	2.5	1.6	1.7	2.0	1.8	1.9	2.0	1.8	2.3	2.2	2.5	2.8	1.9	2.1	2.3	5.5
From 15 to 20 years		3.6		1.7	2.4	4.9	3.4	2.4	3.7	3.2	2.7	3.2	4.7	2.4	2.4	3.4	2.5	2.8	2.5	3.3	3.3	3.2	4.1	4.0	2.5	2.3	3.0	
From 20 to 25 years	20.2	17.1	28.9	5.7	5.5	13.1	6.5	5.4	10.7	9.1	9.3	13.8	9.3	4.1	4.1	6.6	5.6	5.3	6.9	5.5	5.9	4.6	13.7	15.0	10.2	5.0	5.2	13.7
From 25 to 30 years				8.3	7.3	12.7	8.0	8.2					10.3	5.2	4.6	7.9	6.1	6.0	6.8	5.6	5.8	5.5				4.8	5.3	
From 30 to 40 years	16.2	15.6	13.4	14.0	13.7	17.2	15.0	13.3	10.0	8.9	10.3	12.8	14.3	11.0	9.7	12.6	12.4	12.2	11.8	12.2	10.0	10.3	10.6	13.5	11.5	10.3	10.7	12.4
From 40 to 50 years	8.3	7.8	5.8	9.3	9.3	8.8	11.1	9.6	8.2	8.1	9.3	9.5	9.4	9.1	9.5	10.2	11.0	11.0	10.3	11.0	10.3	10.2	11.3	9.5	11.6	10.7	11.0	9.7
From 50 to 60 years	3.8	4.1	2.8	5.0	5.3	3.9	4.8	5.1	5.1	6.7	7.1	6.7	5.9	7.2	7.6	7.6	8.4	8.7	8.0	8.5	8.5	8.6	8.6	6.9	8.3	9.5	9.9	6.8
From 60 to 70 years	1.9	2.4	1.3	2.5	2.8	1.8	2.9	2.9	3.3	4.0	4.3	4.3	3.4	5.0	4.6	4.7	5.3	6.1	5.4	6.9	6.9	6.7	6.7	4.5	8.6	8.0	9.0	4.7
From 70 to 80 years	1.0	1.2	.5	1.5	1.7	1.0	1.4	1.3	2.1	2.1	2.3	1.9	1.6	2.6	2.2	2.5	2.7	3.6	3.0	3.3	3.7	4.2	4.2	3.0	6.1	4.2	5.3	2.6
From 80 to 90 years	.5	.5	.3	1.1	.7	.4	.7	.6	1.1	1.2	1.0	.7	.7	1.2	.8	.8	1.2	1.0	1.0	1.3	1.3	1.6	1.1	1.2	2.6	2.3	2.1	1.2
From 86 to 100 years	.2	.2	.1	.4	.3	.1	.3	.3	.5	.4	.5	.3	.1	.4	.5	.3	.3	.5	.5	.3	.3	.4	.8	.4	.9	1.1	.7	.3
100 years and upwards	.1	.0	.0	.0	.1	.1	.1	.0	.2	.2	.2	.1	.1	.2	.3	.2	.3	.3	.2	.3	.2	.4					.3	
Unknown age	17.4	13.8	9.6	.4	....	....	....	8.0	17.9	11.1	7.4	7.1	3.6	11.0	9.0	7.0	5.3	3.6	3.4	3.3	3.0	2.7	.5	1.1	.6	.4	.1	5.4

VITAL AND MORTUARY STATISTICS OF NEW ORLEANS, 1881.

MORTALITY FROM SOME OF THE PRINCIPAL DISEASES, CLASSIFIED ACCORDING TO AGE AND COLOR, DURING THE YEAR 1881, CONSOLIDATED FROM THE RECORDS OF THE BOARD OF HEALTH, UNDER THE DIRECTION OF JOSEPH JONES, M. D.

DISEASES.	Under 1 Year.		1 to 2 Years.		2 to 5 Years.		5 to 10 Years.		10 to 15 Years.		15 to 20 Years.		20 to 30 Years.		30 to 40 Years.		40 to 50 Years.		50 to 60 Years.		60 to 70 Years.		70 to 80 Years.		80 to 90 Years.		Above 90 Years		Total of Colors.		Total, both Colors.
	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	W.	C.	
Yellow Fever	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Malarial Fevers	19	18	10	10	20	12	15	7	14	10	21	12	37	13	35	13	33	13	27	6	16	8	8	6	1	1	1	....	267	129	396
Scarlet Fever	5	2	15	6	76	15	45	6	10	8	3	....	4	....	2	...	..	...	..	....	...	....	....	...	...	...	...	...	160	37	197
Typhoid Fever	1	....	1	2	3	....	2	1	6	6	10	4	14	3	4	5	...	....	3	....	1	....	....	....	....	....	....	....	45	21	66
Measles	4	....	8	2	5	2	3	1	....	....	1	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	21	5	26
Small-pox	....	....	....	....	....	....	....	....	....	....	..	....	1	1	1	....	...	1	1	...	...	..	....	....	....	....	....	....	3	2	5
Diphtheria	5	3	7	1	27	5	27	4	8	1	1	...	1	2	...		1	....	....	....	....	....	....	....	....	....	....	....	77	15	92
Diarrhœal Diseases	196	56	72	38	25	27	13	10	9	3	4	4	32	17	29	20	49	17	64	18	40	20	18	5	3	1	....	2	557	238	795
Congestion of the Brain	18	4	7	...	4	1	3	2	1	2	1	2	5	4	11	8	26	2	18	3	16	1	5	4	2	4	....	....	118	36	154
Consumption	2	2	1	2	2	7	1	7	2	10	30	26	133	106	135	94	90	64	65	38	40	24	9	7	1	....	1	1	512	388	900
Pneumonia	31	37	17	13	11	13	5	5	2	2	4	5	15	28	10	19	15	14	20	14	11	9	8	8	5	2	4	....	128	169	327
Bright's Diseases	...	...	...	...	1	...	1	1	..	...	4	1	8	4	14	6	11	10	14	10	13	7	2	4	1	1	...	1	69	45	114
Cancerous Diseases	...	....	..	..	....	....	....	1	..	....	1	...	...	3	8	...	18	12	27	14	19	8	9	4	3	....	..	....	85	42	127
Suicides	....	....	....	..	....	....	....	....	....	..	2	....	5	..	11	1	7	....	5	...	1	....	....	..	..	....	....	....	31	1	32
Sunstroke	....	....	....	....	....	....	....	....	....	1	..	....	3	1	8	...	10	1	6	2	...	....	1	....	....	....	....	....	28	5	33
Total	284	138	138	74	184	82	115	45	52	43	82	54	258	182	268	166	260	134	250	105	157	77	60	38	16	9	6	4	2131	1193	3264

It will be observed that in an average of twenty-seven years, 20 per cent the deaths in New Orleans occur in infants under one year of age, and .7 per cent between one and five years, 3.9 per cent between five and ten ars, and 5.5 per cent between ten and twenty years.

Nearly one-half, or more exactly 43.1 per cent, of the deaths in New Orans occur between the period of birth and the age of twenty years.

The relative mortality in New Orleans between twenty and forty years, d in the most vigorous and active period of life, is heavy (twenty to rty years, 13.7 per cent; thirty to forty years, 12.4 per cent), reaching 1 per cent of the entire mortality.

Without doubt this large mortality, from twenty to forty years, is due to influx of men in the prime of life, engaged in commercial and maritime rsuits, and the necessary exposure in this hot, moist climate.

Yellow fever occasions a heavier mortality amongst men than women, d amongst men at that period of life, when their habits are most active, d their exposure to the vicissitudes of climate greatest.

A just estimate of the progressive increase as well as the relative salu- ty of cities and countries might be based upon the number of marriages d births to the population.

To reason upon such statistics, we must be assured of their accuracy. the marriages and all the births should be recorded.

In New Orleans, certain conditions exist, which render the statistics re- ng to the record of births and marriages valueless for purposes of scien- deduction, as the rate of increase or decrease of the population of New eans:

The Act of 1877, which transferred the duty of registering mar- es and births to the Board of Health, is defective in that it inflicts no for failure; and provides no mode in which parties failing to report er marriages or births, shall be punished.

A large proportion of the population of New Orleans, is composed of red people in the proportion, according to the United States census of , of 57,748 colored to 158,395 white. It is not to be supposed that a so recently emancipated from slavery, should appreciate the great ad- tages afforded by the legal record in the public archives of marriages births.

We have shown that over one third of the deaths recorded in New eans for 1881, either occurred in charitable institutions, or were certi- to by the coroner. If one-third of the inhabitants of New Orleans are poor to provide either the means of medical attendance or proper shel- and food during sickness, it is not to be supposed that they should ess either the means or the intelligence to record marriages and deaths.

The legitimacy of a birth does not depend upon its public registration.

The legality of a marriage does not depend, in the United States of erica, upon its mere registration in the public archives.

he following statistics embrace the total number of births and marriages rded at the office of the Board of Health of the State of Louisiana, ng the year 1881:

VITAL STATISTICS OF NEW ORLEANS, 1881—MARRIAGES AND BIRTHS BY MONTHS, CLASSIFIED ACCORDING TO COLOR AND NATIVITY IN NEW ORLEANS, DURING THE YEAR 1881. CONSOLIDATED FROM THE ORIGINAL RECORDS OF THE BOARD OF HEALTH UNDER THE DIRECTION OF JOSEPH JONES, M. D.

MONTH.	Both whites.	Both colored.	Husband alone white.	Husband alone colored.	Both United States.	Both foreign.	Husband alone United States	Husband alone foreign	Total.
January	115	39	.....	.....	114	10	9	12	145
February	98	34	....	.....	106	21	2	3	132
March	82	18	.....	.....	78	11	2	9	100
April	74	15	.....	.....	69	12	5	3	89
May	68	11	.....	.....	61	13	2	3	79
June	87	17	.....	.....	85	13	5	1	104
July	59	9	....	.....	54	11	1	2	68
August	80	12	.....	.....	74	12	3	4	92
September	95	17	.....	.....	84	17	6	5	112
October	89	13	.....	.....	88	7	1	6	102
November	101	26	.....	.....	100	14	6	7	127
December	122	21	.....	.....	113	21	3	6	143
Total	1070	223	.....	.....	1026	162	44	61	1293

VITAL STATISTICS OF NEW ORLEARNS, 1881—BIRTHS BY MONTHS, CLASSIFIED ACCORDING TO COLOR, SEX AND NATIVITY OF PARENTS, IN NEW ORLEAS, DURING 1881.

MONTH.	Color.		Sex.		Nativity of Parents.				
	Whites.	Colored.	Males.	Females.	Both United States.	Both foreign.	Father alone Native.	Father alone Foreign.	Total births by months
January	246	37	135	148	158	64	15	46	283
February	257	40	172	125	172	69	11	45	297
March	264	41	454	151	201	54	12	38	305
April	203	51	142	112	153	57	11	33	254
May	196	21	118	99	125	41	5	46	217
June	173	18	93	98	93	59	8	31	191
July	232	32	117	147	133	52	14	65	264
August	225	26	125	126	157	39	3	52	251
September	193	26	101	118	123	53	8	35	219
October	158	18	87	89	103	41	12	21	176
November	193	20	107	106	109	38	17	49	213
December	137	27	77	87	84	41	7	32	164
Total	2477	357	1428	1406	1610	608	123	493	2832

It will be observed that only 1293 marriages were recorded in 1881, which 1070 were white and 223 colored; during the same period, 28 births, of which 2477 were white, and only 357 colored. The white childr recorded were eight times as numerous as the colored; although the pop lation is in the ratio of about three whites to one colored.

In 1880, the records were very similar in the general results to those 1881: thus, the marriages recorded, whites 1040, colored 249; total 129 births, whites 2442; colored 196; total 2738.

According to the statistics the births in New Orleans in 1881 and 18 did not equal one-half the mortality. Such results are evidently o partial and incapable of furnishing data for careful calculation, as to rate of increase of New Orleans, by the inherent energies and multipli tion by birth of the inhabitants.

How shall full accurate statistics of the births and marriages be tained?

The law is defective, and although on the one hand the great advanta of a correct registration of births and marriages is appreciated by the

elligent and virtuous citizens, and although as President of the Board of Health, I have endeavored to perfect the registration, by using the sanitary police as mediums of information, and by circulars to physicians, midwives, clergymen and recorders; at the same time the results have not been satisfactory.

The mere appendage of penalties to the law, as it stands, would not secure a full registration of marriages and births amongst the poor and ignorant; and the difficulty would be solved by an annual sanitary census of the entire population. The Board of Health is without the necessary funds for such an undertaking.

PREVENTABLE CAUSES, OF DISEASE AND DEATH. INTRA-MURAL SEPULCHRE IN NEW ORLEANS, EFFECTS OF THE MODE AND PLACE OF BURIAL UPON THE HEALTH OF THE INHABITANTS, RESULTS OF INSPECTION OF THE VARIOUS CEMETERIES OF NEW ORLEANS. STATISTICS OF BURIALS IN THE CEMETERIES OF NEW ORLEANS. POISON SUICIDE, VIOLENCE, MURDER, ACCIDENTS, DROWNING, STARVATION, INTEMPERANCE, DELIRIUM-TREMENS, MANIA A POTU, INSANITY, NUMBER OF CASES OF POISONING ACCIDENTAL OR INTENTIONAL IN NEW ORLEANS.

INTRA-MURAL SEPULCHRE IN NEW ORLEANS, EFFECTS OF THE MODE AND PLACE OF BURIAL OF THE DEAD UPON THE HEALTH OF THE INHABITANTS.

The subject of the effects of *Intra-Mural* sepulchre, is of the greatest importance to the health and welfare of the citizens of New Orleans, not only from the deleterious effects of the products of putrification in all places, under all circumstances, but more especially from the peculiar topographical situation, the great commercial importance, and the warm, moist climate of the delta of the Mississippi.

In order to obtain data for intelligent action upon this important subject by the General Assembly of Louisiana, and the Common Council of New Orleans, the President of the Board of Health, instituted a careful inspection of all cemeteries within the limits of the Parish of Orleans.

The following public and private cemeteries and burial grounds are located on the east bank of the Mississippi river, within the parish of Orleans.

NEW ORLEANS, LOUISIANA. PUBLIC AND PRIVATE CEMETERIES AND BURIAL GROUNDS.

St. Louis No 1. Second District, bounded by North Basin, North Liberty, Conti and St. Louis streets.
St. Louis No. 2, Second District, bounded by Customhouse, St. Louis, Claiborne and Robertson,
St. Louis No. 3, Second District, bounded by North Basin, St. Louis, Conti and North Liberty. One square called American Cemetery.
Lafayette No. 1. Fourth District, bounded by Washington, Prytania, Coliseum and Sixth. One square.
Lafayette No. 2, Fourth District, bounded by Washington, South Basin, St. Denis and Sixth. One square.
Valence Street Cemetery, Sixth District, bounded by Valence, Bordeaux, Rampart and Dryades. One square.
Carrollton Cemetery, Seventh District, bounded by Adams, Lower Line and Seventh and Eighth streets. Four squares.

St. Joseph, Fourth District, bounded by Washington, St. David, South Liberty and Sixth. Two squares.
St. Vincent, Sixth District, bounded by St. David, Green and St. Patricks. Three squares.
Locust Grove Cemeteries Nos. 1 and 2, Fourth District, bounded by Locust, Freret and Sixth and Seventh streets.
St. Vincent de Paul, Third District, bounded by Louisa, Piety, Urquhart and Villere. One square.
Girod Cemetery, First District, bounded by South Liberty, Perilliat, Cypress and Magnolia streets : 250 feet wide and 400 feet deep.
Holt's Cemetery, five to six acres, First District.
Hebrew Cemetery, First District, bounded by Elysian Fields and Gentilly road ; one square.
Hebrew Cemetery, called Dispersed of Israel; First District, on Canal street, between Anthony and Metairie Ridge, 250 feet square.
Polish Hebrew, called also Jewish Rest; First District, on Canal street, opposite Dispersed of Israel.
Hebrew, called Hebrew Place of prayer ; Sixth District, on Joseph street.
German Lutheran, Sixth District on Canal, between Anthony and Bernadotte street, one square and four lots for burial rest.
Odd Fellows, corner Canal and Metairie streets, 360 feet square.
Charity Hospital No. 1, on Canal, between Anthony and Metiarie streets ; 200 feet wide 1600 feet square, exclusive for Hospital.
Charity Hospital No. 2, Metairie Road, between Bienville and Canal streets, one square.
Masonic, on Bienville, between Metairie and Anthony streets, three squares.
St. Patricks No. 1, on Canal, between Anthony and Metairie streets, 400 feet wide and 1500 feet long.
St. Patricks No 2, on Canal, between Anthony and Metairie streets, opposite No. 1.
St. Patricks No. 3, on Metairie, between Canal and Bienville streets, two squares, opens from St. Patrick No. 2.
Fireman's, Metairie Ridge and Canal street.
Cypress Grove, Metairie Ridge and Canal street.
Greewood Nos. 1 and 2, Metairie Ridge and New Canal.
Chalmette National, one mile below Barracks on river, 108 acres for burial of Union Soldiers.
Olivier, Sixth District, corner of Verrett and Market.
St. Bartholemew Cemetery, Fifth District, De Armas and Lapeyrouse.
William Tell, Franklin and Hancock, Gretna, Tenth street, between Laroesier and Noveta. The Hebrew Cemetary belonging to the Hebrew Association, opened in 1828, was closed in 1860.

It is evident from the preceding table that there are thirty-five cemeteries and burial grounds in New Orleans, many of which, as St. Louis Nos. 1, 2 and 3, Lafayette, Nos. 1 and 2, St. Vincent de Paul and Girod Cemetery, are situated in the heart of populous districts.

The removal, or rather establishment of a large number of cemeteries, as the Fireman's, Cypress Grove, Greenwood, Odd Fellows, Masonic, St. Patricks Nos. 1, 2 and 3, Metairie Ridge Cemetery, beyond the bounds of the thickly populated portion of the city has without doubt diminished the diseases referrable to the emanations from the putrefying corpses of the dead.

MODE OF BURIAL.

Owing to the saturation of the soil of New Orleans and its environs with water, and the rapidity with which excavations fill with water, the custom was early introduced of interring bodies in brick or stone tombs constructed upon ground.

At the present time, with the exception of the destitute burials at the public expense, only Israelites are buried under ground.

Graves are dug from three to four feet deep, except at the cemeteries of Metairie Ridge, where, the ground being higher than in the other parts of the cemetery, it is possible to dig to a depth of seven feet.

All other interments are made in vaults of brick stone or iron, which are built on the surface of the ground, the bodies after being introduced into the vaults are walled in by brick or mortar.

There is no means of escape for the foul gasses arising from the decomposition of the corpses, except through the pores of the brick and mortar. Of course, whenever a vault, or a division of a vault, is opened, before putrefaction is completed, there is an immediate escape of noxious gas.

Girod Street Protestant Cemetery, fronts on South Liberty, between Perilliat and Cypress streets, and in the rear by the city Work House, 600 feet in length by 260 feet in width, Sexton Mr. Peter Barr, since 1865. There are no records to show when the cemetery was started. The oldest tomb dates from 1817. Number of vaults and tombs : 5736 vaults and 1099 tombs. Drainage good. Drains into the street gutters. Sanitary condition good. The vaults and tombs are in general good condition, the walls are good, having been repaired two years ago. There have not been any interments in the ground since April 1835, being prohibited by law.

St. Patricks Cemeteries are located, No. 1 in the First District, No. 2 in the Second District, No. 3 in the Second District. St. Patricks' No. 1, is very much crowded and it is most impossible to dig a new grave without coming in contact with an old grave. Sexton H. Healy. When opened: no records previous to September 1841. Number of vaults and tombs: 269 vaults and 163 tombs. Drainage fair, sanitary condition good. Total interments 31,375; died of yellow fever 4253, of small-pox 186, of cholera 1214, making a total of 5653.

Cypress Grove No. 1 and 2, are located, No. 1, bounded by Canal street, Metairie Road and Charity Hospital cemeteries; No. 2 adjoins No. 1. Sexton J. B. Faget. When opened: Cypress Grove No. 1, no records previous to July 1841, No. 2, no records previous to June 1846. Cypress Grove No. 1, number intered in vaults and tombs 5591, in the ground 3783, total 9374. Whites 9327, colored 47. Deaths from yellow fever 820, small-pox 144, cholera 348, making a total of 1312. Cypress Grove No. 2, total interments, 34,412. Deaths from yellow fever, 5308; small-pox, 700; cholera, 2466; total, 8474. Drainage good sanitary condition good.

Washington Cemeteries—The preceding table comprises five cemeteries, viz: Lafayette Nos. 1 and 2. Locust Grove, Valence and Carrollton, as near as the records show that the Carrollton interments were included from the year that Carrollton was annexed (1874) to New Orleans, up to January 1, 1883, Valence Cemetery, from 1874 to January 1, 1884, Locust Grove Cemetery from 1865 to 1879, when it was closed, Lafayette No. 2, from 1840 to 1884. Lafayette No. 1, the records of the cemetery previous to 1843 were destroyed, the oldest record is a receipt dated 1829.

Lafayette No. 1—Located on Washington street, between Coliseum and Prytania, and bounded in the rear by Sixth street. Size 300 feet square, opened about the year 1829, contains 1778 lots and about 600 vaults. Drainage good, sanitary condition good, with the exception that the walls of the vaults fronting on Washington street are cracked; these cracks must be refilled with cement each year.

Lafayette No. 2, located on Washington street and bounded by St. Patrick street, St. Patrick and Sixth streets, size 295 by 348 feet long, opened in 1840, contains 480 lots and 2 vaults. Drainage and sanitary condition good, tombs and walls in better condition than those of Lafayette No. 1.

Valence Cemetery, located on Valence street, bounded by St. Denis, St. Patrick and Soleaux streets, opened in 1872, size 300 feet square, contains 800 lots. Drainage and sanitary condition good.

Total interments Washington Cemeteries, 44,366.

Sextons: B. S. Quinman, from 1832 to 1844, H. G. Hicks, from 1844 to 1861, Philip Harty to 1862, Olivier Rice, 1862, D. F. Simpson, from 1862 to 1865, Jas. Hogan, 1865 to 1867, J. F. Callico, 1867 to 1869, Jim Tracey, 1869 to 1871, J. F. Callico, 1871 to 1874, Cornelius Donovan, 1874 to 1876, Denis Irvin, 1876 to 1878, P. Gallagher, 1878 to 1879, J. F. Birchmier, 1879 to date.

Charity Hospital cemeteries, Nos 1 and 2. Location—Charity Hospital Cemetery No. 1 bounded by St. Patrick's Cemetery No. 1, and lots on Canal street. Charity Hospital Cemetery No. 2, bounded by St. Patrick's Cemetery No. 3 and Metairie road. Interments in Charity Hospital cemeteries commenced May, 1850; previous to this date interments from Charity Hospital were made in Cypress Grove No. 2. Interments in Charity Hospital Cemetery No. 1 commenced May, 1850, and ended January, 1872. Interments in Charity Hospital Cemetery No. 2 commenced January, 1872, and continue to date. Sexton, Charles Rolling. Interments, Charity Hospital No. 1, from May, 1850, to January, 1872: Whites, 21,418; colored, 1104; total, 22,522. Charity Hospital, No. 2, January, 1872, to date, interments, 6864; whites, 4128; colored, 2736. Grand total, 29,386. Total interments from yellow fever, 6939; small pox 15; cholera, 1572; total, 8526.

St. Vincent de Paul, Nos. 1 and 2, No. 1 bounded by Louisa, Villere, Piety, and Urquhart streets, No. 2 bounded by Villere, Piety, Desire, and Urquhart streets, No. 3 bounded by Louisa, Robertson, St. John Baptist, and Piety streets. These cemeteries were opened in 1840, but all records previsus to 1851 have been destroyed. Sexton, V. Gomez, 1851. Contains—No. 1, 1501 vaults, 211 tombs; No. 2, 1580 vaults. Total interments: Whites, 26,053; colored, 6879; total, 33,832. Total interments from yellow fever, smallpox, 1127; cholera, 1261; total, 5651.

St. Joseph's No. 1, located on Washington street, bounded by St. David, Liberty and Robertson streets, opened in 1855, size 300 by 250 feet, and contains 522 lots and 422 vaults. Drainage and sanitary condition good.

St. Joseph's Cemetery No. 2, located on Sixth street, and bounded by St. David, Liberty and Seventh streets; same size as No. 1, contains 2 tombs, no vaults and 522 lots. Drainage and sanitary condition good; Sexton: Wm. Maura, for both cemeteries; total interments 14,912, died of yellow fever 1088, small-pox 191, cholera 105.

Association Temenie Derich Cemetery, located on Canal street, opened in 1858; all interments in the ground; total interments, white 378, died of yellow fever 69, small-pox 7, cholera 10, total 85.

St. Louis Cemetery No. 1, bounded by St. Louis, Basin, Treme and Conti streets. Sexton, M. Rodrigue, records previous to 1855 has been lost, number vaults, 352; number tombs, 836. Total interments, white, 6128; colored, 2950; total, 9078. Died of yellow fever, 388; small pox, 159; cholera, 121; total, 668.

St. Louis Cemetery No. 2, (comprises three blocks) (a) bounded by St. Louis, Conti, Robertson and Claiborne streets, (b) bounded by Bienville, Conti, Claiborne and Robertson streets, (c) bounded by Bienville, Customhouse, Claiborne and Robertson streets. St. Louis Cemetery No. 2, opened about 1825; no records previous to 1843. Records from September 1, 1847, to January 1, 1865, were stolen, records from January 1, 1861, to February 28, 1869, lost or destroyed. Sexton, J. F. Calico, since 1881. Drainage and sanitary condition, good. Number of tombs, 1794; number of vaults, 2347; total number of interments, 13,768. Died of yellow fever, 298; small-pox, 612; cholera, 248; total, 1158.

New St. Louis Cemetery, or Potter's Field, bounded by Esplanade and Jockey Club Park, opened June, 1856. Sexton, Hypolite Bienvenue; number of tombs and vaults, 637; total number of interments in vaults and tombs, 634; in the ground, 8760; total, 9,394. Died of yellow fever, 656; small-pox, 199; cholera, 112; total, 967. Drainage and sanitary condition good.

Greenwood Cemetery. Records from 1855 to date: Sexton, Daniel Merritt; drainage and sanitary condition good. Interments in tombs and vaults, 2190; graves, 4042; total 6232. Died of yellow fever, 419; small-pox, 133; cholera, 42; total, 6826.

Grand Lodge Masonic Cemetery, bounded by Bienville, Metairie, Anthony and Cont streets. Opened in 1867. Sextons, J. L. Lippe from 1867 to 1876, William Tell, from 1876 to date. Sanitary condition and drainage good. This location is very high it is necessary to dig eight (8) feet before striking water. Number of vault forty-eight, number of graves fifty; total interments, 509; died of yellow fever, sixty two; died of small-pox, six; died of cholera, one.

Odd Fellows Rest Cemetery, bounded by Canal, Matairie and St. Patricks Cemeter No. 2, opened in 1849, Sextons, D. Merritt, 1849 to 1868, D. Quin, 1868 to 1870, F. A Bradley, 1870 to 1881. E. Barrett, 1881 to date, size 237 feet long by 340 feet wide. Drainage and sanitary condition good; number of vaults 640, tombs 44, graves 26, total number interments 2563, died of yellow fever 236, small-pox 27, cholera 59.

Congregation Dispersed of Judah Cemetery, bounded by Canal, St. Helena, Custom house and Antonia streets, opened in 1846, size 180 feet front on Canal street, Sexto Adam Eisenhauer. Drainage and sanitary condition good; total number of interme all in the ground, 518 all whites. Diseases not stated.

First German Evangelical Lutheran Cemetery of St. John's Church, bounded Canal, Customhouse, Anthony, and Bernadotte streets, opened September, 1867. Se ton, Otto Burandt. Drainage and sanitary condition good; number of tombs, 8. To interments, 171. Died of yellow fever, 11; smallpox, 1; cholera, none.

Cemetery of the Congregation Gates of Prayer, Joseph street, Sixth district, oper in 1850. Records previous to 1867 were destroyed by fire. Sexton, L. Rosenbau Drainage and sanitary condition good; all interments in the ground. Total interme previous to 1867, ——; total interments since 1867, 169; died of yellow fever, 18; sm pox, 4; cholera, 2.

Cemetery Waters of Israel. Cemetery records from 1865: Sexton, H. Bonart. Dr age and sanitary condition good. All interments in graves. Total interments, died of yellow fever, 10; small-pox, 1; cholera, none.

Hebrews' Rest Association Cemetery. The cemetery of this name, located on Jack street, was opened in 1828 and closed in 1866. Hebrews Rest was then removed to E ian Fields street. Records from 1866 to date are complete. Drainage and sanitary dition good. All interments in graves. Total interments, 917. Died of yellow fe 118; small-pox, 5; cholera, 14.

Metiairie Cemetery. Sexton, Wm. H. Benson, cemetery opened in 1874. Drainage sanitary condition good. Total interments, 603; died of yellow fever, 32; small- none; cholera, none.

Holts Cemetery opened May 1879. Drainage and sanitary condition good. Interm white, 407; colored, 1617; total interments (all grave), 2054; Died of yellow fever, n small-pox, 422; cholera, 2. Of those intered as died from small-pox in 1883, 127 di Luzenburg Hospital, seventy-one died at Beard's City Hospital, 111 died at their dences, total 309 cases in 1883.

Campo Santo Cemetery. Located on Washington Avenue between Prospe Sallidell streets, Third District. Sexton, Father Trevis. This cemetery opened J 1875. Drainage and sanitary condition good. Interments, whites 843, colored total 2331; died of yellow fever, fifty; died of small-pox, 124; died of cholera, non

Firemen's Cemetery (Algiers), right bank of the Mississippi River. Locat Algiers. Sexton, J Peterson. This cemetery opened in the latter part of 1878. drainage and sanitary conditions are good. Interments, all white, sixty-seven; di yellow fever one, died of small-pox ten, died of cholera none, total eleven.

St. Bartholomew's, Catholic Cemetery, Algiers, right bank of Mississippi River. Sexton, Father Brady. Opened 1857. Drainage and Sanitary condition good. Total interments, 2129. Sex, color, and diseases not stated.

Gretna Fireman's Cemetery, Gretna, parish of Jefferson, right bank of Mississippi River, opened 1866. Drainage and sanitary condition good. Total interments (all whites), 455. In 1878 there were 29 interments from yellow fever. This was the only year in which a record of diseases was kept.

Great Samaritan Colored Society Cemetery; located in Gretna, parish of Jefferson. Sexton, James Sparks. Cemetery opened in 1871. Drainage and sanitary condition good. Total interments, 50, all colored. Died of yellow fever, none; small-pox, 9; cholera, none.

Union Benevolent Colored Cemetery. Location, Gretna. Sexton, C. F. Brown. Cemetery opened in 1867. All records previous to 1874 are lost Drainage and sanitary condition good. Total interments (all colored), 45. No record of diseases.

U. S. Government Camp Chalmette National Cemetery. Locatad on left bank of Mississippi river, Parish of St. Bernard. Drainage and sanitary condition good. Total interments, 12,461. Known, 6,844; unknown, 5617. No records of diseases, except that in 1878 there were 18 interments from yellow fever. The records of this cemetery extend from 1866 to 1884.

In the execution of the inspection of the cemeteries of New Orleans, valuable service was rendered by the intelligent and faithful sanitary officers, Emanuel Bohner and Irving D. Allen, who acted immediately under the direction and supervision of the President of the Board of Health.

INTERMENTS IN THE VARIOUS CEMETERIES OF NEW ORLEANS BY YEARS—TOTAL DEATHS AND DEATHS FROM CONTAGIOUS AND INFECTIOUS DISEASES, ACCORDING TO RECORDS.

YEAR.	Total Deaths.	Deaths from Yellow Fever.	Deaths from Small-pox.	Deaths from Cholera.	Total Deaths from Contagious and Infectious Diseases.
1833	90	.....		.....	.....
1834	1354	.....	.....	.....	.....
1835	400	.....	.....	.....	.....
1836	174	.....	.....	.....	.....
1837	397	.....	.....	.....	.....
1838	148	2	.....	.....	2
1839	269	103	.....	.....	103
1840	182	1	.....	.....	1
1841	485	141	2	.....	143
1842	360	23	3	.....	26
1843	1254	185	5	.....	190
1844	1480	24	.....	.....	24
1845	1506	.....	.....	.....	.....
1846	2800	127	1	.....	128
1847	5910	1858	5	3	1866
1848	4080	594	29	604	1227
1849	6475	620	55	2136	2811
1850	5447	45	22	862	929
1851	5949	12	36	504	552
1852	7160	411	35	957	1403
1853	12955	8037	38	469	8544
1854	9627	2419	21	979	3419
1855	8920	2412	56	1225	3693
1856	5036	76	1	34	111
1857	5026	196	67	17	280
1858	10875	4646	68	12	4726
1859	6087	96	27	9	132
1860	7171	11	18	.....	29
1861	5158	1	1	2	4
1862	5884	2	.....	1	3
1863	7259	1	.....	3	4
1864	8011	6	512	42	560
1865	7179	1	543	4	548
1866	8417	216	182	1287	1685
1867	10363	3040	47	563	3650
1868	4798	6	9	100	115
1869	6075	2	129	3	134
1870	7281	574	498	13	1085
1871	5909	39	5	7	51
1872	6526	27	25	5	57
1873	7727	187	459	124	770
1874	6959	13	499	4	516
1875	6527	51	313	5	369
1876	6690	41	202	6	249
1877	7122	1	1036	5	1042
1878	10635	3945	135	4	4084
1879	5407	15	.....	6	21
1880	5904	1	1	5	7
1881	6819	.....	4	7	11
1882	6174	3	386	2	391
1883	6208	1	931	.....	932
Grand total	272649	31207	6406	10009	47622

The above recapitulation does not include the U. S. Government Cemetery, or cemeteries on the right bank of the Mississippi, as their records are very imperfect.

The city of New Orleans embraces a vast extent of territory, extending from the slaughter house to the upper line of Carrollton, taking in Algiers on the right bank, reaching to Rigolets and connecting Lake Pontchartrain with Lake Borgne; but the more densely populated portions lie along the course of the Mississippi river; there is, therefore, ample room for the removal of the dead out of the inhabited portions of the city.

It is important to note that there has been for many years, a progressive removal of the grave yards beyond the crowded limits of the city, to the Metairie Ridge; so that at the present time only nineteen cemeteries may be regarded as strictly intra-mural, viz: First District, one grave yard, American, on Basin street, near Girod; Second District, four grave yards, St. Louis No. 1, Basin, between Conti and St. Louis streets, St. Louis No. 2, 3 and 4, Claiborne, from Customhouse to St. Louis streets; Third District, four grave yards, New St. Louis, Esplanade, near Bayou St. John, Hebrew, Gentilly Road, St. Vincent de Paul, Louisa and Urquhart, Campo Santo, Urquhart, near Girod street; Fourth District, Lafayette No. 1, Washington, near Prytania street, Lafayette No. 2, Washington and St. Patrick streets, St. Joseph No. 1, Washington, near St. Patrick streets, St, Joseph No. 2, Sixth, near St. Patrick street; Fifth District, two grave yards, St. Bartholemew, Algiers, Hughes, Algiers; Sixth District, two grave yards, Valence, Valence street, "St. Vincents," St. Denis street; Seventh District, two grave yards, Catholic. Carrollton, City, Carrollton.

The remainder of the cemeteries, including Holt, Metairie, Odd Fellows, Masonic, Lutheran, Cypress Grove, Greenwood, Potter's Field, Hebrew and St. Patrick's, are situated at a considerable distance from the city proper, and are not strictly intra-mural.

Without doubt the General Assembly of Louisiana should give the most careful consideration to the subject of intra-mural sepulture, and should frame such laws as would practically close the cemeteries in the populous portions of New Orleans and confine the burials to localities removed as far as possible from the thickly populated portions.

The question as to the influence of intra-mural sepulture upon the health of the citizens of New Orleans has never been fully or satisfactorily investigated, and unfortunately the medical history of the city is sadly deficient in past times in the monthly and yearly observations upon the relations of the soil, climate, commerce and epidemics to the public health.

A thorough investigation of the subject of the deleterious effects of cemeteries upon human beings, should embrace the following inquiries.

1. Mode of burial.
2. Number of burials.
3. Nature of diseases causing deaths.
4. When burials take place in the ground, the nature of the soil and the character, depth and origin, and periodic changes of the sub-soil water.
5. The effects of the different seasons, and of the degrees of heat and moisture upon the nature and rate of the purtrefactive process.
6. Chemical and physical properties of the gases exhaled.
7. The nature of the organisms developed during the putrefaction of the dead bodies.
8. The effects of the products of putrefaction in general upon the nature and composition of the surrounding atmosphere.
9. Effects of the putrefaction of the bodies of those who have died of infectious and contagious diseases, as small-pox, scarlet fever, measles, asiatic, cholera and yellow fever.
10. To what distances can the deleterious gases and organized bodies developed during putrefaction penetrate to the detriment of living human beings?
11. In what manner is this deleterious product of putrefaction chiefly desseminated? by diffusion and multiplication in the soil and subsoil waters? by progessive ærial diffusion from the foci of infection in all directions, laterally as well as upwards? by volatization upwards, in the atmosphere there by condensation in combination with water, at night or during the period of rain, forg or mist, thus contaminating our drinking water.

HISTORICAL.

After a careful examination of the mortuary and historical records of New Orleans, the earliest reference to the injurious effects of intra-mural sepulture was found in the manuscript records of the Old Cathedral, and relate to the year 1788.

During a period of seventy years after the foundation of New Orleans, we have no reliable data by which to form an opinion of the effects of the mode and place of burial upon the health of the inhabitants.

The great fire of 1788, which broke out on Good Friday in the month of March, in a hovel of a Spaniard on Chartres street, about three o'clock in the afternoon, and which being fanned by a high wind, desrroyed nine hundred houses before it was extinguished, was followed by pestilence.

Through the courtesy of Mr. T. O. de Jaham, custodian of the records of the Catholic, I have been furnished with the following extracts from the manuscript volumes.

"I, brother Antonio de Sedella, Capuchin priest of the very holy Church Cathedral of the City of New Orleans, certify on the faith that I have: That because of the epidemic that the inhabitants of the city and neighbourhood suffered after the great fire which took place the 21st of March of the year 1788, the governor of these colonies, who was then Don Esteban Miro, after consulting those empowered, and with the consent of the Administration (Agustamiento), gave the power to remove the cemetery or Holy Grounds in the rear of the Charity Hospital, farther than the other from that city, to which I consented because of the reasons that they gave me, and which related to the public health. I also certify that it was then said to me, and I never heard anybody say, that they intended taking from this church the ancient right of property and possession that they had, and have, on those grounds; and I also certify that in the above great fire perished, several books, and many parcels of documents concerning the same church, from its foundation or establishment; and to make this legal I, with superior orders, have given this in New Orleans, 9th of April, 1801.

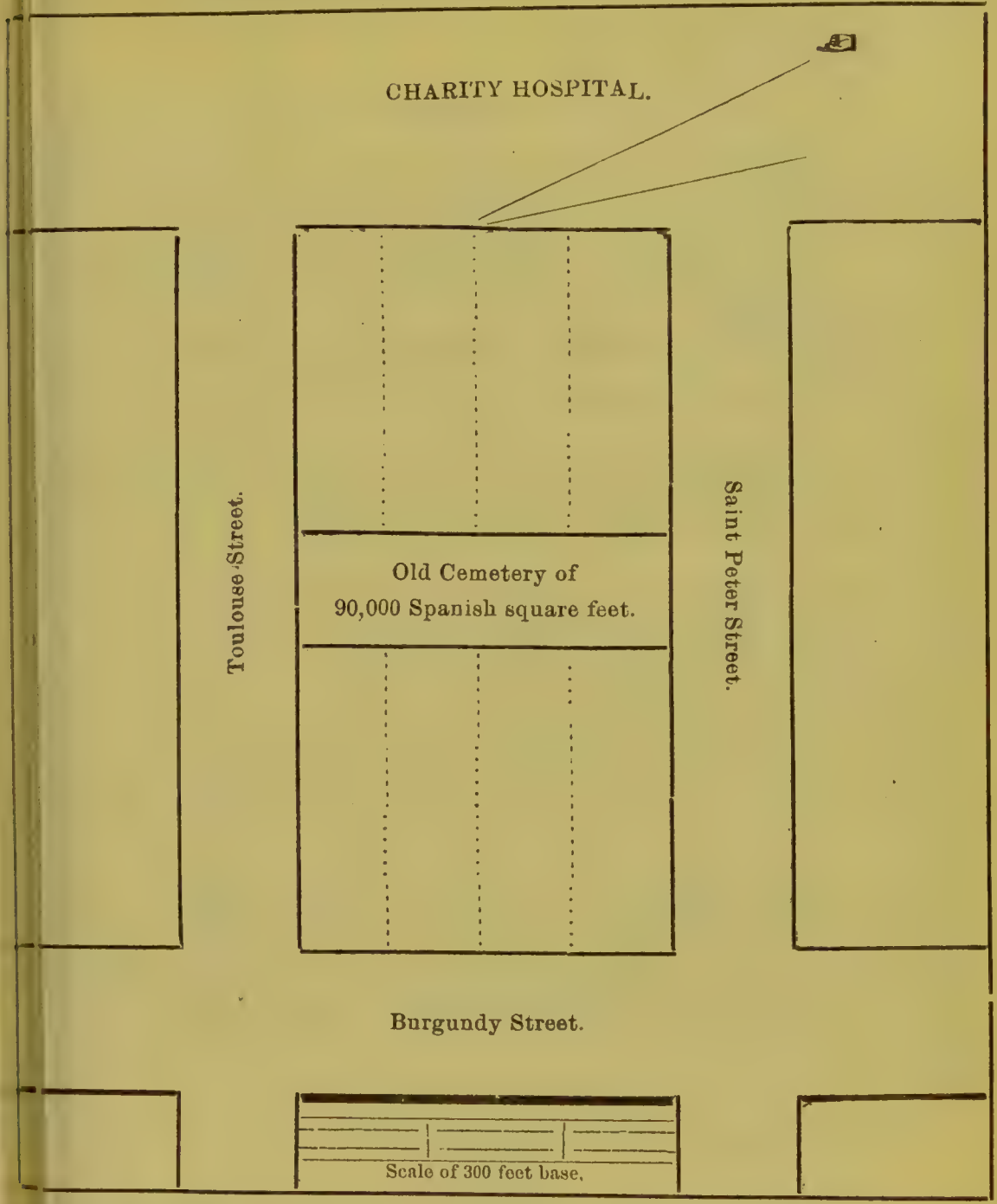
"(Signed), FR. ANTONIO DE SEDELLA."

"Your Highness,—The cemetery of this city is situated in the centre of the last block, which I have thought a long time since prejudicial to the public health, which was really shown this year, everybody having been sick in the colony, with putrid and deadly fevers, and specially dysentery, so that a large number of people died. I have myself experienced that loathsome smell emitted by the cemetery."

The remainder of this paper consists of a prayer to have the cemetery removed.

The paper is in the handwriting of Father de Sedella.

The petition was accompanied by the following plan, illustrating the position of the old cemetery.



YOUR HIGHNESS: The cemetery of this city is situated in the center of the last bl[ock], and has always been prejudicial to the public health. The deleterious effects of [the] cemetery has been visibly felt this year, which has been very unhealthy, for all the P[rov]ince in general suffered from putrid and deadly fevers, and especially dysentery. M[an]y people have died. Whilst passing the cemetery, having myself perceived a fœtid sm[ell], I sought information from the neighbors, and they affirmed that these foul odors ha[ve] been very often perceived this year. Their complaints I have referred to the Ca[bi]ldo, which I enclose under Nos. 1 and 2, with certificates from doctors and surgeons (N[os.] 3 and 4), and my own observations (No. 5). The consequence is that we are looking for another burial ground, out of the city, where the dead will produce no deleterious effects, and the corpses will begin to be buried three inside of eight days."

This arrangement meets with the approbation of the people, and will consequently be agreeable to His Majesty.

I pray your Excellency to authorize the City Administration (Cabildo) to provide [for] it so that the new cemetery be permanent, and the old one be condemned, the bones [are] to be removed to the new one, so that in about two years houses will be built [on] where it now stands. The old cemetery comprehends twelve lots, of 70 feet front, 120

feet deep, which his Majesty might give away to citizens on condition to contribute to the City Treasury six dollars annually.

So God help your Excellency many years.

New Orleans, 12th November 1788."

This is a copy, not signed, but the handwriting appears to be that of the Bishop's Secretary.

The circumstances which caused the parish government to remove the cemetery grounds on three different occasions were probably the same as those which occasioned the removal on the 17th and 24th of October, 1788; said removal having been proposed in the spring, the number of corpses buried there being already so large that there was no more space to bury the dead. On opening the new graves underground, bodies were found, which occasioned the emission of foul smells, destructive to the health of the city, and more especially after the epidemic which the people suffered that summer, and were then suffering.

These facts illustrate in the strongest manner the necessity of abolishing so dangerous a proceeding, and at the same time of establishing a cemetery in another locality remote from the city."

The preceding extracts from the Spanish were translated by Mr. Carrouche, No. 39 Chartres street.

The preceding records are of great interest, not only in establishing the proposition that yellow fever and pestilential fevers have desolated New Orleans in past times before the epidemic of 1796, which many writers have regarded as the first appearance of this disease in New Orleans, but also as affording incontestable proof that the custom of burying the dead within the limits of the city was prejudicial to the health of the citizens.

Doctor M. Michel Halphen, in his "Memoire Sur Le Cholera-Morbus Complique d'une Epidemic de Fievre Jaune que, a Regné Simultanement a la Nouvelle Orleans en 1832,' (Paris, 1833), gives a dreadful description of the filthy condition of the city of New Orleans, and of the terrible ravages of the Asiatic cholera.

In 1832 New Orleans received the cholera from St. Louis, by the arrival of the steamboat Constitution on the 24th of October.

With the accustomed ignorance, indifference and incompetence of the civil authorities of New Orleans, the cholera found this city in a filthy condition; gutters reeking in filth the streets quagmires of mud and filth, the houses built upon low, ill-drained sites, the privies overflowing with urine and excrement; the drainage canals choked; the cemeter located in the heart of the city, badly constructed, badly drained, and crowded wit corpses.

The ignorant and credulous people seized with avidity upon petitions of every descri tion. The Mayor and Common Council resorted to such means as burning tar and the firin of cannon to disinfect the disease. Never in any country had pestilence been more swi or fatal, and out of a population of 35,000, 6,000, or more than one-sixth perished in le than twenty days. The air was polluted by the unburied and putrifying corpses, whic accumulated in piles in the cemeteries across the streets. Trenches could not be du with sufficient rapidity to secure the putrifying and moulding corpses, and frequentl putrid corpses were exposed in digging the graves. The stagnant water became co taminated, and the ditches and gutters were reeking with the foul putrid drainings fro the grave yard.

PREVENTABLE CAUSES OF DISEASES AND DEATHS.

POISON, SUICIDE, VIOLENCE, MURDER, ACCIDENTS, DROWNING, STARV TION, INTEMPERANCE, DELIRIUM TREMENS, MANIA A POTU, INSANITY.

A large portion of the annual report of the President of the Board Health for 1880 was devoted to the consideration of those causes of di eases and deaths in Louisiana, and more especially in and around Ne Orleans, which, to a great extent, were under the control of hum agency, and which might be to a large degree prevented, or diminished a controlled.

In this connection, and with a view to arouse public interest and to le to the institution of effective measures, such sanitary works and refor were strenuously advocated as: protection from overflow, drainage, sewe age, the abandonment of rice culture within and around the city.

The great sanitary problems of New Orleans were held to be—

TABLE G.

Mortuary Statistics of New Orleans, Louisiana, United States of America, Illustrating the Mortality by Months in the White and Black Races, During Five Years, Subsequent to the American Civil War, namely 1877, 1878, 1879, 1880 and 1881. Consolidated from Original Reports and Records Collected and Classified by Joseph Jones, M. D., New Orleans, 156 Washington Street, Corner of Camp, Fourth District, January 1, 1882.

NAME OF DISEASE.	Grand Total Five Years. W.	Grand Total Five Years. B.	Grand Total Five Years. W. & B.
GENERAL DISEASES.			
Small-pox	510	746	1256
Measles	94	47	141
Scarlatina	221	44	265
Dengue	1	2	3
Typhus Fever	25	5	30
Cerebro-Spinal Fever	45	11	56
Enteric or Typhoid Fever	179	85	264
Simple Continued Fever	22	19	41
Yellow Fever	3983	181	4164
Malarial Fevers — Intermittent Fever	73	52	125
Malarial Fevers — Remittent Fever	236	95	331
Malarial Fevers — Congestive Fever	723	180	903
Malarial Fevers — Typho-Malarial	120	49	169
Malarial Fevers — Malarial Fever (unclassified)	412	187	599
Cholera			
Cholera Morbus	58	48	106
Cholera Infantum	432	140	572
Diphtheria	280	41	321
Whooping Cough	74	32	106
Erysipelas	46	8	54
Pyæmia	69	24	93
Puerperal Fever	51	33	84
Rheumatism	45	35	80
Syphilis	50	36	86
Cancer	441	149	590
Scrofula	11	18	29
Tubercular Meningitis	40	15	55
Tuberculosis			
Phthisis Pulmonalis	2521	1611	4155
Tabes Mesenterica	553	59	612
Diabetes	20	1	21
Rickets	4	1	5
Anæmia	77	45	122
General Dropsy	124	127	251
Gout	10		10
Influenza	2	1	3
Scurvy	3	1	4
Leprosy	4		4
All other General Diseases not enumerated	40	19	59
LOCAL DISEASES.			
Diseases of the Nervous System.			
Congestion of the Brain	484	158	642
Inflammation of the Brain (Encephalitis)	102	29	131
Meningitis	291	86	377
Apoplexy	384	140	524
Sun-Stroke	41	6	47
Hydrocephalus	52	15	67
Diseases of the Cerebral Arteries	48	13	61
Spinal Meningitis	112	51	161
Myelitis	17	4	21
Hæmiplegia	44	19	63
Paraplegia	16	12	28
Paralysis (unclassified)	137	65	202
Locomotor Ataxia	13	2	15
Tetanus — Unclassified	3	7	10
Tetanus — Idiopathic	15	8	23
Tetanus — Traumatic	142	117	259
Trismus Nascentium	476	420	896
Hydrophobia	18	5	23
Convulsions	116	65	181
Convulsions Infantile	474	295	769
Epilepsy	53	36	89
Hysteria	2		2
Delirium Tremens	118	22	140
Insanity	28	3	31
Paralysis of the Insane	8	4	12
All other Diseases of this System	181	31	212
Diseases of the Circulatory System.			
Pericarditis	35	13	48
Dropsy of the Pericardium	10	8	18
Endo-Carditis	41	32	73
Valve Disease of Heart — Aortic	41	33	74
Valve Disease of Heart — Mitral	143	130	273
Heart Disease (unclassified)	372	318	690
Heart, Enlargement of	46	30	76
Degeneration of Arteries	4	6	10
Aneurism of Heart	14	7	21
Aneurism of the Aorta	4	1	5
Embolism	2		2
Phlebitis	1		1
Phlegmasia Dolens			
All other Diseases of this System	55	23	78
Diseases of the Respiratory System.			
Croup	115	59	174
Laryngitis	60	12	72
Oedema of Glottis	10	1	11
Bronchitis, acute	295	159	454
Bronchitis, chronic	147	61	208
Asthma	66	37	103
Pneumonia	855	783	1638
Abscess of Lungs	8	5	13
Gangrene of Lungs	8	6	14
Emphysema of Lungs	19	4	23
Atelectasis	8	3	11
Hæmoptisis	60	39	99
Pleurisy	25	22	47
Empyema	14	18	32
Hæmorrhage of Lungs			
All other Diseases of this System	20	10	30
Diseases of the Digestive System.			
Hæmatemesis	17	5	22
Stomatitis	2	16	18
Teething	249	195	444
Ulcerative Sore Throat	9	4	13
Thrush	4		4
Sloughing Sore Throat	8	1	9
Goitre	1	1	2
Tonsilitis	2	1	3
Gastritis	126	53	179
Dyspepsia	12	4	16
Enteritis	707	309	1,016
Dysentery	414	194	608
Ulceration of the Bowels	9	4	13
Hæmorrhage of the Bowels	20	6	26
Intussusception of the Bowels	24	8	32
Obstruction of the Bowels	15	5	20
Diarrhœa	545	304	849
Hernia	28	9	37
Fistula of Anus	2	1	3
Tuberculosis of Liver	1		1
Hepatitis	196	72	268
Abscess of the Liver	71	20	91
Cirrhosis of the Liver	160	42	202
Atrophy of the Liver	3		3
Degeneration of the Liver	9	2	11
Jaundice	19	5	24
Splenitis	2		2
Peritonitis	116	48	164
Ascites	20	21	41
All other Diseases of this System	39	16	55
Diseases of the Urinary and Generative Organs.			
Bright's Disease	332	205	537
Suppression of Urine	2	1	3
Cystitis	30	15	45
All other Diseases of this System	35	19	54
Affections Connected with Parturition.			
Hæmorrhage	33	9	42
Puerperal Mania	1		1
Puerperal Convulsions	33	27	60
Puerperal Septicæmia	2		2
All others	37	19	56
Diseases of the Organs of Locomotion	10	12	22
Diseases of the Cellular and Cutaneous System	63	54	117
Conditions not Necessarily Associated with General or Local Diseases.			
Premature Birth	180	122	302
Old Age	207	188	395
Debility	581	484	1,065
Debility Infantile	458	278	736
All others	13	5	18
Poisoning	12	3	15
General Injuries.			
Drowning	200	74	274
Burns and Scalds	95	73	168
Starvation and Hunger	19	23	42
Inanition	6	4	10
All other General Injuries	145	67	212
Local Injuries.			
Wounds	58	33	91
All other local injuries	104	26	130
Human Parasites	3	3	6
Tumors, Non-Malignant	25	20	45
Congenital Malformations	60	22	82
Suicide	86	6	92
Killed or Murdered	36	8	41
Unknown, or Not Stated	1	1	2
Total Deaths	23,069	11,108	34,177
Still-born	1,152	780	1,932

1. Protection of the city from overflow by substantial levees, elevated least four feet above the line of the highest waters.
2. Thorough surface and sub-soil drainage. Under this head should be cluded the reclamation of the swamps in the rear of the city, the per- tion and proper grading of gutters and surface drains, and the proper cavation, perfection, cleansing and flushing of the canals which receive storm waters and those continually yielded by the gutters.
3. The immediate and continuous removal of all fœcal matter.
4. The daily removal of garbage by an efficient scavenger force.
5. The constant repair and cleansing of the streets.
6. Paving the streets with the most substantial materials.
7. Abundant supply of river water for the use of the inhabitants and the cleansing of private premises and the daily putrification of the rkets, gutters and streets.
8. The protection of the citizens of Louisiana from unqualified druggists, lwives and practitioners of medicine, and the perfection and extension the system of registration of marriages, births and deaths to the entire te.
9. The regulation and restriction of the sale of drugs, medicines and sons.
10. The regulation and restriction of the sale of alcoholic and intoxicating nulants.
11. The prevention of adulteration of food.
12. The proper elevation and construction and ventilation of all private llings and public buildings. Under this head, also, should be included proper supply of pure air and pure water.
13. The proper construction, ventilation and conduct as regards all san- y matters affecting the material, intellectual or moral nature of all in- es of prisons, jails, police, stations, schools. hospitals and asylums.

PECTION OF DRUGS, MILK, ARTICLES OF FOOD, FERMENTED AND DIS-

TILLED DIQUORS, (WINES, MALT LIQUORS, DISTILLED LIQUORS, BRAN-

DY, WHISKY, GIN, RUM, BITTTERS, ETC.)

is of great importance to the welfare of the citizens that the City ncil and Board of Health, acting in concert, should appoint and com- ion one or more inspectors, of the highest moral and intellectual char- r, and of undoubted scientific attainments, and thoroughly skilled in ical and microscopical science, and learned in the physiological, the- utical and toxicological action of drugs, medicines and poisons, and e substances usually employed for the adulteration of food, whose it shall be to inspect all drugs and medicines, and all articles of food uding milk and meat), and to determine, by careful microscopical and ical analysis, all adulterations of drugs, medicines and articles of

should also be the duty of said Inspector, or Inspectors, to examine uality of the drinking waters, microscopically and chemically and not point out impurities and draw up plans of relief, but also to determine, r as practicable, the effects of drouth and of excessive rains, and of hanges of season upon the chemical constitution and properties of the rs of the Mississippi River, and of the cisters.

cts might be accumulated to show that far more victims perish from dulteration of medicines and articles of food, than from the direct nistration of poison, either accidentally or intentionally.

It is difficult to estimate the number of infants who perish annually in this and in other cities from the infamous practice of adulterating and diluting milk.

A small portion of the vast sums expended on amusements, spectacular shows, boat and horse races, lotteries, political campaigns, gambling-houses, and bar-rooms and clubs, would suffice to expose and prevent these adulterations of drugs, medicines and articles of food, which, directly or indirectly, destroy large numbers of useful and precious lives.

DIFFICULTY OF CONTROLLING THE SALE OF POISONS.

The difficulty of controlling the sale of poisons arises not only from imperfections in the laws and their enforcement, and in the insufficient and inefficient character of the police regulations and forces, but also from the nature and uses of the substances designated as poisons.

The term poison in popular language is applied only to those substances which destroy life in small doses; but this view of the nature of a poison is too restricted, for it obviously excludes numerous compounds, as the salts of copper, tin, zinc, lead and antimony, the poisonous properties of which cannot be disputed, but which, generally speaking, act as poisons only when administered in large doses. In a medico-legal point of view it is immaterial whether a man dies from one ounce of a comparatively inert poison or from two grains of such poisons as arsenic, strychnine or cyanide of potassium.

When death is caused by the substance taken, the quantity required to destroy life cannot enable us to distinguish a poisonous from a non-poisonous substance.

If we adopt the comprehensive definition, that "a poison is a substance which, when absorbed into the blood, is capable of seriously affecting the health or of destroying life," a large number of substances used in the treatment of disease, of both animal, vegetable and mineral origin, would be included, as well as a large number of compounds, as those of arsenic, zinc, lead, copper, cyanogen and mercury, used in the arts and manufactures.

If a substance be capable of destroying life or injuring health, it is of little importance so far as the responsibility of the prisoner is concerned whether its action on the body is of a mechanical or chemical nature, and whether it operates fatally by absorption into the blood or not.

Whether the administering to any person of any poison or other deleterious thing be followed by any bodily injury or not, is a felony, provided the intent has been to commit murder.

The difficulty of dealing efficiently with the subject of the sale of poisons is still further shown by the large number of substances employed in medicine and in the useful arts which possess poisonous properties. The poisons have been divided into several classes, according to their mode of action on the system, namely, irritant, nacrotics and narcotico-irritants.

I.—IRRITANT POISONS.

Under this head may be included sulphuric acid (oil of vitriol), sulphate of indigo, nitric acid (aqua fortis), nitro-muratic acid (aqua regia), hydrochloric acid (muratic acid), oxalic acid, acid oxalate of potash, tartaric acid, acetic acid, potash, soda, carbonates of soda and potash, ammonia and carbonate of ammonia, nitre (saltpetre), sulphate of potash, iodide of potassium, chloride of barium, carbonate of baryta, phosphorus, arsenic, arsenious acid, arsenite of potash (Fowler's solution,) asenite of copper (Scheele's green, emerald green), arsenic acid and arsenates, sulphides

rsenic, (orpiment,) chloride of arsenic, arseniuretted hydrogen, corrosive sublimate (perchloride of mercury), calomel (subchloride of mercury), ammoniated mercury (white precipitate), red oxide mercury (red precipitate), persulphide of mercury (cinnibar, vermilion), cyanide of mercury, subsulphate of mercury (Turpeth Mineral), nitrates of mercury, iodides of mercury, (red iodide and green iodide), acetate of lead (sugar of lead), subacetate of lead (Goulard's extract), carbonate of lead (white lead), oxides of lead (yellow oxide, massicot, litharge, and minium or red lead), copper, sulphate of copper (blue vitriol), subacetate of copper, (verdegris), antimony (tartar emetic), sulphate of zinc (white vitriol), chloride of tin (Dyer's spirits), nitrate of silver (lunar caustic, lapis infernalis), perchloride of gold, sulphate of iron (copperas, green vitriol), muriate of iron (tincture of perchloride of iron), subnitrate of bismuth, bichromate of potash, chromic acid, chromate of lead, thallium, iodine, aloes, colocynth, gamboge, jalap, scammony, savin, croton oil, castor seeds, colchicum, hellebore, oil of turpentine, oil of tar, mouldy bread, carib or locust bean, cantharides, poisonous fish, mussels, cheese, sausage, poisonous, pork, bacon, trichiniasis, putrescent food.

II.—NEUROTIC (NARCOTIC OR CEREBRAL) POISONS.

Opium, poppies, Godfrey's cordial, Dalby's carminative, camphorated tincture of opium (paregoric elixir), powder of ipecac and opium (Dover's powders), black drop Battley's sedative solution, chlorodyne, nepenthe, tincture of opium (laudanum), morphia and its salts, hydrocyanic or prussic acid, cyanide of potassium, essential oil of bitter almonds, narcotic liquids and vapors, sulphide of carbon, coal naptha, wood naptha, amyline, fusil oil, (amylic alcohol), benzole, nitrobenzole, aniline, oil of wormwood, nitroglycerine or gleonoine, alcohol, ether, chloroform, camphor, tobacco, nicotina, cocculus indicus, picrotoxine, darnel seeds, calabar bean, bhangi, henbane, lactucarium, solanum.

III.—SPINAL POISONS.

Strychnia, brucia.

IV.—CEREBRO SPINAL POISONS.

Conium maculatum (hemlock), conia, œnanthe crocata, æthusa cynapium, aconite (monksbane), aconitina, atropia belladonna (deadly nightshade), atropia, lobelia inflata (Indian tobacco), digitalis purpura (fox glove), datura stramonium (thorn apple), cristus laburnum (laburnum), taxus baccata (yew), ligustrum vulgare (birch).

V.—GASEOUS POISONS.

Carbonic acid, charcoal vapor, carbonic oxide, coal and coke vapor, sulphurous acid, vapor of lime, cements and brick kilns, confined air, coal gas, carburetted hydrogen and water gas, sulphuretted hydrogen, effluvia of drains and sewers, mephitic vapors, exhalations from the dead.

VI.—LIGHTNING, COLD, HEAT, STARVATION, DROWNING.

Under the last head are included certain physical causes of death which cannot be strictly classed with poisons.

It is evident from the preceding enumeration that, in a medico-legal view, many substances must be regarded as poisons which are daily employed as medicines and as valuable materials absolutely indispensable in the arts and manufactures.

Thus arsenic, a violent poison, enters into the composition of many pigments, and of many preparations used in destroying insects and pests of all kinds, and for the preservation of stuffed birds and animals, and the

embalming of dead bodies. Cases of ill-health and actual poisoning have occurred from the extensive use of arsenic in the preparation of certain kinds of decorative wall paper. Paris green, extensively used for the destruction of caterpillars in the cotton fields, has destroyed life upon various occasions, and pigments containing arsenic have actually been used in coloring candies, and have destroyed the lives of children.

COPPER VESSELS AND COPPER IN ARTICLES OF FOOD.

At the meeting of the Board of Health, on Friday evening, November 27, 1881, the following paper was submitted by the President:

The extensive employment of copper vessels in cooking, as well as the use of certain salts of this metal as pigments for coloring wall papers, several articles of food—as pickles, fruits and candies—have been the occasion of accidental poisoning in this and other cities, and the attention of medical inspectors and of sanitarians should be directed to this source of disease.

All the salts of copper are poisonous, only those more commonly known in commerce as Scheele's green (arsenite of copper), blue vitrol (sulphate of copper), and verdigris (subacetate of copper), will be considered.

The sulphate of copper (blue vitriol) has been frequently taken and administered in large doses for the purpose of suicide and in attempts at murder; in the latter case the strong metallic taste possessed by this salt would in general render it impossible that the poison should be taken unknowingly.

The arsenite of copper (Scheele's green) owes its poisonous properties chiefly to arsenic.

With the exception of these salts, poisoning by copper is usually an accidental result of the common employment of the metal for culinary purposes.

The *sulphate of copper*, it doses of half an ounce and upwards, acts as a powerful irritant on adults, and a much smaller quantity would suffice to destroy infants or children. It speedily causes vomiting of the most violent kind, and the vomited matters are remarkable for being generally of a blue or green color. If the green color of the vomited liquids is owing to altered bile, it will not acquire a blue color when adding to a portion of the green liquid a srtong solution of ammonia; but if it is caused by a salt of copper, the change of color will indicate the fact. The symptoms of poisoning by the sulphate of copper are headache, colicky pains in the abdomen, with purging and vomiting; and in aggravated cases, spasms of the extremities and convulsions have been noted.

The medicinal dose of sulphate of copper, as an emetic, is from five to fifteen grains; and as a tonic, from one or four grains.

The subacetate of copper (verdigris) produces symptoms somewhat similar to those caused by the sulphate, namely, a strong styptic, metallic taste; also, a sense of constriction in the throat, followed by some colicky pains, vomiting of a green colored liquid, and purging, with violent straining (tenesmus).

In consequence of the uncertainty of its operation, subacetate of copper is not employed internally.

The arsenite of copper (Scheele's green) is met with in commerce and the arts, and constitutes, wholly or in part, a great variety of green pigments known as emerald green (aceto-arsenite of copper), employed for paper hangings, mineral green, Brunswick, Schweinfurt or Vienna green; in oil paint, in cakes, in boxes, of water colors, in the green coloring ma-

read over confectionery, in wafers, in adhesive envelopes, and in various nds of green decorative papers used for covering the walls of sitting and drooms. Although the arsenite of copper is insoluble in water, it is fficiently soluble in the acid mucous fluids of the stomach to be taken by the absorbents and carried as a poison into the blood. The symp- ns induced are similar to those caused by arsenic—violent irritation of e stomach, vomiting, purging, and intense burning sensation and colic. Toxicologists have recorded many cases of fatal poisoning in children m eating confectionery colored by the green arsenite of copper. Many the colors used for confections are of a poisonous nature; the pink color en by cochineal or madder is the only one which can be regarded as nocent.

Death has been caused by the employment of the arsenite of copper, to e a rich green color to blance mange, and it has thus been ignorantly ployed for the coloring of materials served at public dinners, under the pression that emerald or mineral green was nothing more than an ex- ct of spinach.

The use of this poison to impart a bright green color to the shelves of kers and green grocers shops is dangerous and should be prohibited, as, bread and meats resting upon these shelves may be contaminated.

It is well known that wall papers covered with loosely adhering aceti- enite of copper are, from their cheapness as well as their brightness of or, extensively used in dwellings.

This pigment consists of fifty-nine per cent of arsenic, and from these glazed papers the poison may be easily scraped or removed by friction. has been computed that a square foot of this paper may yield from twen- eight to seventy grains of the arsenical compound, and in rooms exposing e or six hundred square feet arsenic is thus liable to be dissolved in the te of a fine dust or powder in the air of the room. It has been observed the physicians and toxicologists, in this and other countries, that work- n who hang these papers or who strip them from the walls suffer from nptoms referable only to the action of arsenic.

The symptoms as described by careful observers are of a uniform char- er, showing their origin from a common cause, namely: dryness and ir- tion of the throat, with cough, irritation of the mucous membrane of eyes and nostrils, dry cough, languor, headache, loss of appetite, nausea, cky pains, numbness, cramp, irritability of the bowels, attended with ucous discharges, great prostration of strength, a feverish condition and sting of the body.

Medical writers have recorded various deaths among children from the of the paper; and it is held by eminent toxicologists that many insidious es of illness and chronic diseases may be referred to the noxious practice covering the walls of sitting-rooms and bedrooms with arsenic.

The manufacture, as well as the use, of paper thus colored with arsenite copper, or any other poisonous compound, should be prohibited by leg- tive enactment.

The sub-chloride and carbonates of copper are also irritant poisons, but not employed to any extent in the arts and medicine.

The action of certain articles of food on copper, when it is used for inary purposes, is not an unfrequent cause of accidental poisoning.

Metallic copper undergoes no change by contact with water, unless air present, when a hydrated carbonate, mixed with oxide of copper is formed. the water contain any acid, such as vinegar, or common salt, or if there ily or fatty matter in contact with the metal, then the copper is more idly oxidized, and the liquor or fat acquires a green color.

If the copper vessel is kept perfectly clean, and the food prepared in it is allowed to cool in other vessels, there is no great risk of its acquiring a poisonous impregnation.

The sanitarian, however, should insist that no acid, saline, fatty or oily liquid should be prepared as an article of food in a copper vessel.

The preparation of fruits, such as preserves, and the boiling of milk, coffee and tea in copper vessels, shold be discontinued.

In this form of copper poisoning the symptoms rarerly appear until after the lapse of three or four hours, and are characterized by nausea, vomiting, colicky pains, and pinching cramps in the limbs.

It should be further observed that all the ordinary copper employed in culinary vessels contaiins arsenic. It has been stated that an impure alloy used by some dentists has been so largely composed of copper as to affect the health of those who have used the plates. The acids and salts in the saliva facilitate the production of a poisonous salt of copper, and probably set free arsenic.

In the making of preserved fruits and vegetable pickles, the salts of copper (blue vitriol) are sometimes used for the purpose of giving a rich green color.

LEAD AND ITS COMPOUNDS.

Lead and its compounds occasion, perhaps, a greater number of cases of disease and death than any other poison, and, in fact, than all other poisons combined.

In the use of lead pipes and lead cisterns it has been established that the purest forms of water, like that furnished by the clouds and stored in our cisterns, act most energetically upon lead, and most rapidly induce symptoms of lead poisoning—violent cramps *(colica pictonum)* and general paralysis.

The use of lead pipes, lead gutters, or lead tanks, for conveying and storing water in this city, is fraught with danger to health and life.

Some estimate of the effects of lead as a poison upon the citizens of New Orleans may be formed by examining the records of our great Hospitals.

CASES OF DEATHS FROM COLICA PINCTONUM (LEAD COLIC) IN THE CHARITY HOSPITAL OF NEW ORLEANS DURING A PERIOD OF THIRTY-FOUR YEARS, 1842—1880.

During the 18 years preceding the civil war (1842–1860) the total admissions into the Charity Hospital from all causes numbered 207,356; total deaths, 29,616, 14.2 per cent; and during this period 710 cases of colica pictonum were treated, with 15 deaths—per cent, 2 7. During the 16 years following the civil war (1864–1880) the total admissions numbered 96,8. deaths, 14,104; per cent; 14.5; colica pictonum, 122; deaths, 4; per c of deaths, 3.2.

During 34 years (1842–1880) the total admissions numbered 304,2 total deaths, 43,710; 14.3 per cent deaths; total cases of colica picton during this period 840, with 19 deaths. We find upon careful analysis the records that during this same period of 34 years, 684 cases of co with 5 deaths, were entered upon the books of the Charity Hospita large portion of which were, without doubt, due to the slow action of l upon the human system.

If to these statistios it were possible to add the large number of patie entered with paralysis caused by lead, it will show that not less than 2

the citizens of New Orleans have been compelled during the past 34 rs to seek relief and treatment for the effects of lead within the walls the Charity hospitol; of course a far greater number thus afflicted did seek relief at the hands of charity.

arious destructive and corrosive poisons, as sulphuric, nitric and hydro- bric acids, are extensively used in the arts, manufactures and agricul- e, and can at all times be purchased in any quantity desired. The e thing is true of oxalic acid, a potent vegetable poison, and used by emakers, and also by washwomen to remove ink stains, etc., from hes.

POISONOUS EFFECTS OF CYANIDE OF POTASSIUM.

yanide of potassium is one of the most formidable poisons known to the chemist; and the extensive use of this salt in certain arts, and ecially in photography, has given rise to many accidents, and also rded facilities for its easy procurement for suicide and poisoning.

GASEOUS POISONS.

o subject is of greater importance to the sanitarian than the effects mpurities in the atmosphere upon the health and comfort of the peo- The full discussion of the effect of aerial poisons upon the human would embrace such questions as—

The variations of the constituents of the atmosphere under the con- ons of climate and soil.

The variations in the normal amounts of carbonic acid aqaeous sture, ammonia, nitric acid, sulphuretted hydrogen, carburetted hydro- organic albumenoid matters, and living animal and vegetable cells.

The effects of terrestrial exhalations and emanations upon the atmos- re. Under this head would be included the matters and gases ejected olcanic eruptions, and the various products of the putrefaction of ani- and vegetable compounds, in swamps, cess pools, gutters and sewers.

The effects of variations in the composition of the atmosphere and e matter, gases and germs resulting from putrefaction. In this re- we propose to limit our researches to the following:

SONOUS EFFECTS OF ILLUMINATING AND HEATING GASES WATER GAS (HYDROGEN AND CARBONIC OXIDE), AND OF COAL GAS (CARBU- RETTED HYDROGEN AND CARBONIC OXIDE.)

e reletive merits of water gas and coal gas, as well as their compara- poisonous effects, have recently engaged the attention of the civic orities of this and other States, and the question, as far as it relates e city of New Orleans, was referred by the Mayor and City Council e President of the Board of Health of the State of Louisiana.

CONCLUSIONS.

rom the preceeding facts we conclude:

Water gas is superior to the ordinary coal gas in heating power.

Water gas can be furnished at less cost to the consumer than ordi- coal gas.

The products or effects of burning water gas are less objectionable less injurious than those arising from the combustion of gas from coal

All forms of illuminating gases, from whatever source derived, are onous when inhaled in large quantities, or in small quantities during iderable periods of time.

5. The public health should be secured from the accidents arising from imperfect apparatus for supplying illuminating gases, by the most stringent laws, and by repeated and thorough inspections.

5. The subject of the influence of illuminating gases upon the health of cities and towns should receive the careful attention of the Board of Health.

7. One argument in favor of the electric light as contrasted with that furnished by illuminating gas is, that it is neither explosive nor poisonous, and produces little or no injurious contamination of the surrounding atmosphere.

ACTUAL NUMBER OF CASES OF POISONING, ACCIDENTAL OR INTENTIONAL, IN NEW ORLEANS.

The great Charity Hospital of the city furnishes the most important field for this investigation, and I have examined, classified and consolidated its records with care, with the following results :

TOTAL ADMISSIONS AND DEATHS FROM ALL CAUSES, AND TOTAL CASES AND DEATHS FROM POISON IN THE CHARITY HOSPITAL OF NEW ORLEANS, DURING A PERIOD OF THIRTY-TWO YEARS—1842-1881, BY JOSEPH JONES, M. D.

Years.	Admissions	Deaths.	Poison.		Remarks.
			Cases.	Deaths.	
42	4404	704	2	1	
43	5013	1041	2	0	
44	5846	713	2	0	
45	.....	.....	.....	.....	
46	8044	855	0	0	
48	11945	1897	1	0	Laudanum.
49	15558	2741	5	3	Laudanum.
50	18476	1884	2	1	Laudanum.
51	18319	1869	1	1	Laudanum.
52	17957	2098	1	1	
53	13759	3164	1	1	Chloroform.
54	13192	2702	0	0	
55	12192	2391	0	0	
56	9432	974	2	1	Laudanum.
57	8897	1017	0	0	
58	11337	2299	0	0	
59	12775	1321	0	0	
60	14000	1390	0	0	
Total for 17 years	.....	.....	19	9	

Years.	Admissions.	Deaths.	Poison.		Remarks.
			Cases.	Deaths.	
64	4861	812	2	2	Arsenic 1, laudanum 1
66	9329	1122	9	2	Belladonna 1, nitric acid 1, opium 1, camphor 1.
67	8612	1438	3	1	Phosphorus 1.
68	4981	490	9	4	
69	6177	784	2	0	
70	7837	1118	7	0	
71	6651	891	6	2	
72	5541	825	7	3	Opium 3, arsenic 1, strychnine 1.
73	5090	993	6	2	Sulphate of zinc 1, opium 4.
74	5231	860	2	0	Opium 2.
75	4845	753	5	1	Opium 2, strychnine 1.
76	5690	742	7	1	Opium 4.
77	6002	805	4	2	Opium 2, carbolic acid 1.
78	5246	693	8	4	Arsenic 2, opium 3.
79	4884	658	8	1	Phosphorus 2, opium 3, chloral 1, poison oak.
Total for 15 years.	.....	.....	85	25	

It will be observed that during a period of seventeen years—1842-1860—nineteen cases of acute poisoning [exclusive of lead poisoning] were treated, about one-half [nine] of which proved fatal; while during a period of fifteen years [1864-1880] following the recent civil war eighty-five cases of acute poisoning [excluding lead poisoning] were treated, less than one-third [twenty-five] proved fatal.

These facts would indicate that poisoning is becoming more frequent in New Orleans.

At this time it is clearly shown that the disease and death arising from the administration of poison, either for purposes of suicide or malice, form but a very small fraction of the total diseases and deaths from all causes in New Orleans.

The comparatively small effect of poison upon the death rate of New Orleans is still further illustrated by a consideration of the large number of patients treated in the Charity Hospital for mechanical injuries, as shown by the following statistics:

DURING 18 YEARS—1842-60.			DURING 16 YEARS—1864-80.			DURING 34 YEARS—1842-80.		
Causes.	Cases.	Deaths	Causes.	Cases.	Deaths	Causes.	Cases.	Death
Burns	547	73	Burns	442	79	Burns	989	152
Scalds	274	33	Scalds	12	1	Scalds	286	34
Fractures	1962	227	Fractures	1202	103	Fractures	3164	330
Contusions	4417	29	Contusions	863	13	Contusions	5280	42
Luxations	308	4	Luxations	209	2	Luxations	517	(
Wounds	3319	189	Wounds	3415	134	Wounds	6464	32
						Total	16700	88

Whilst, therefore, during a period of thirty-four years, 16,700 cases wounds and mechanical injuries, with 887 deaths resulting therefrom, we treated in the Charity Hospital, only 104 cases, with 34 deaths, by poiso ing were reported.

The deaths occasioned by accidental or intentional poisoning in New Orleans, generally, in like manner, form but a small proportion of the deaths, and are far less than those occasioned by violence, as will be seen from the following table:

DEATHS FROM POISONING, SUICIDE, KILLING AND MURDERING, AND FROM GENERAL AND LOCAL INJURIES IN NEW ORLEANS, DURING A PERIOD OF 23 YEARS.

YEAR.	Deaths from poison.	Suicide.	Killed or Murdered.	Local Injuries.	General Injuries.	Total deaths from all Causes.
849.....	5	0	....	91	165	9862
850.....	9	10	....	66	156	7819
853.....	4	14	....	47	200	15787
856.....	1	20	26	51	127	5069
857.....	5	19	18	59	109	5581
858.....	7	21	6	77	183	11720
860.....	3	20	31	60	237	7341
865.....	4	10	9	49	123	7016
866.....	11	7	6	40	133	7754
867.....	6	16	55	31	126	10096
868.....	8	19	17	72	102	5343
869.....	0	8	3	57	152	5593
870.....	6	11	5	86	137	6942
871.....	19	14	14	80	190	6059
872.....	7	26	18	77	218	6588
873.....	11	9	27	56	149	7995
874.....	18	20	12	119	182	7193
875.....	11	18	12	70	161	6535
876.....	10	12	9	66	154	6685
877.....	2	3	9	36	182	7169
878.....	1	16	10	52	147	10717
879.....	2	21	8	42	119	5122
880.....	4	20	4	43	128	5623
Total.....	154	334	309	1428	3580	168255

During a period of twenty-three years there perished in New Orleans by poison, 154; by suicide, 334; killed or murdered, 309; by local injuries 1428; by general injuries, 3580; out of a grand total ot deaths from all causes, of 168,255.

SOCIETY FOR THE RECOVERY AND RESCUE OF DROWNED PEOPLE—DROWNED IN AND AROUND NEW ORLEANS.

It is worthy of note, on the other hand, that the number drowned annually in the city of New Orleans exceeds those dying by poison and suicide. Thus in 1860 the deaths by drowning numbered 88; 1861, 79; 1867, ; 1868, 62; 1869, 59; 1870, 69; 1871, 74; 1872, 64; 1873, 77; 1874, 93; 1875, ; 1877, 61; 1878, 59; 1880, 54.

During the fourteen years specified 1002 (one thousand and two) of the habitants of New Orleans perished by drowning. Without doubt, the ajority of the unfortunate beings perished in the full vigor of manhood d womanhood. The value of each inhabitant to the State has been esnated at $1000 (one thousand dollars), and if this estimate be accepted, ew Orleans has lost, through this channel alone, one million of dollars ring the past fourteen years. But this is a mercenary view, and leaves t of view the physical, mental and moral distress of the afflicted friends d families.

Situated upon the banks of the most important river in the world, whose bosom is plowed by the ships of all nations, New Orleans, of all cities, should establish a society or association for the recovery and salvation of drowned and drowning people.

POISONOUS EFFECTS OF ALCOHOL—DELIRIUM TREMENS AND MANIA A POTU.

It can be clearly demonstrated, by facts, that alcohol is the most destructive of all poisons to the human race, and to this general assertion the citizens of New Orleans form no exception. Thus in 1857, in the city of New Orleans, the deaths from intemperance and delirium tremens numbered 84; 1858. 139; 1859, 138; 1860, 175; and during the four years specified 526 individuals perished in New Orleans from the direct effects of alcohol.

A more direct demonstration of the effects of alcohol in producing disease and deaths can be derived by a careful examination and consolidation of the statistics of the Charity Hospital, which must be regarded as the great pathological thermometer or weather-gauge of the health of New Orleans.

The records of the Charity Hospital of New Orleans show the following important facts:

During a period of thirty-four years—1842-1862; 1864-1880—there were treated in the wards of this institution 4694 cases of delirium tremens and mania a potu, of which number 914 (19.4 per cent) died; during the same period 1873 cases of intemperance were treated, of which 97 (5.1 per cent) terminated fatally.

That is, during a period of thirty-four years, in the city of New Orleans, an army of 6567 trembling, maddened, raving, drunken men and women, poisoned by alcohol, were conveyed to the wards of the Charity Hospital, and of which number more than one-seventh, or 1011 (one thousand and eleven), perished.

To estimate fully the destructive effects of alcohol we must add the cases of death from the following diseases, treated in the Charity Hospital during the same period of thirty-four years, 1842-1880:

Diseases.	Cases.	Deaths.	Per Cent.
Chirrhosis of Liver	390	240	61.5
Abscess of Liver	131	88	67.1
Ascites	981	428	43.6
Gastritis	1673	124	7.4
Anasarca	896	269	30.0
Hepatitis	806	221	27.4

From the diseases just specified, which, as are well known, are in a large measure dependent upon the use of distilled liquors in hot climates, there resulted 4877 cases and 1370 deaths.

It would be fair to estimate that, during the last thirty-four years (allowing for the relative proportion of deaths and cases of sickness in the city and Charity Hospital), alcohol has directly caused at least 20,000 cases of sickness and occasioned over 5000 deaths in the city of New Orleans.

It is impossible to form any correct estimate of the pecuniary loss to the city and State by the destructive effects of alcohol, for of all poisons it occasions the greatest physical, mental, moral and industrial loss.

But the worst feature of the question of the influence of spirit drinking upon the population is its direct relation to crime.

ew Orleans is not only the great seaport of the Mississippi Valley, and mportant gateway for foreign immigrants to the Southern and Southtern States; but its population is heterogenous, and its streets are nged by the representatives of every country upon the globe.

large portion of its population have no interest, either personal or inted, in the institutions of the State and general governments. The tyings of prisons, hospitals and almshouses, and the worst elements of surrounding States and European society, are constantly fermenting putretying in this vast caldron.

is, therefore, not a matter of surprise that the government and proper ing of a city with such diverse elements should not only be difficult, that rowdyism, crime, drunken rioting and "hoodlumism" should be non, and that officials dependent for their election upon such elements, often sprouting like the foul fungus from its native soil, should not only u the execution of the laws, but should often furnish the most striking mples of their infraction. These difficulties are common to all great seatowns and cities in this country and Europe, and the term "modern m" is no more applicable to New Orleans than to New York, Philania, Baltimore, Paris, Liverpool, Glasgow or London.

the other hand, it must be admitted that in New Orleans, as well as e other great cities just named, those great monuments of the Chrisreligion, churches, hospitals, public schools and benevolent societies, ighty agencies for the preservation and advancement of the material noral and intellectual welfare of the citizens.

the files of our daily papers and the records of our police courts, us, hospitals and asylums be examined, it will be found that the cause of misery, want, insanity and crimes of all kinds, culminating icide and murder, originates in the unrestrained sale and the unresd consumption of alcoholic stimulants, known to the public under the us names of whisky, brandy, gin, rum and absynthe.

e vast proportion of street fights, stabbings and shootings occur within round the liquor saloons, corner groceries and barrel-houses, found every square within the populous districts of this city; and six-sevenths e inmates of our prisons, work-houses and insane asylums, were di- or indirectly brought to their degraded and distressed state by whisky.

the drinking saloon, bar-room and barrel-house, the rank and file of s congregate, and the candidates for place and power too often find places a grand field for bargaining and bribing, and use whisky as a t agent.

s the province of our wise, learned and incorruptible legislators to e ways and means to regulate the unrestrained sale of distilled liquors, o command the peace at all times and in all places. It is not our in- to inquire whether expostulation would be useless and entreaty sed, and legal proceedings utterly unavailing, through the intricacies processes and the failures of the officers of justice; but, as Presif the Board of Health, of the State of Louisiana, I desire by stern to arouse the public to a sense of the effects of the greatest and most ctive of all poisons.

poison, alcohol, which is accessible in all places and at all times to citizens of Louisiana, dethrones reason, undermines and gangrenes oral and intellectual nature, dissipates credit, blasts the reputation, ots the tenderest and purest family and social ties, and destroys both and soul.

ADULTERATION OF FOOD AND MEDICINE.

As President of the Board of Health I desire to arouse the attention o its members and of those charged with the sanitary and quarantine legis lation of this great State to the importance of establishing efficient mean to protect its citizens from the adulteration of food and medicine.

At the meeting of the Board of Health held August 11, 1881, I urged th establishment of the inspection of articles of food, milk, fermented an distilled liquors, and drugs, upon an equitable and thoroughly scientu basis.

Not only was this subject amply illustrated by the sanitary and medic legal history of New Orleans, but the great truth was recognized that su labor should be confided only to men of the highest intellectual and mo character and scientific attainments. If any scheme looking to the prot tion of the most vital interests of the citizens be adopted, either by t Board of Health and City Council, acting in conjunction, or by the Leg lature of the State, acting in its sovereign capacity, it is important th intellectual, moral and scientific attainments alone should be recogniz and employed.

If such offices, demanding thorough microscopical and chemical traini and knowledge of the most profound and varied character, be peddled by political demagogues for the reward of some past political service would be best to stop at the threshold, and leave to wiser times the est lishment of a system of inspection and investigation by skilled chemi pathologists and toxicologists—labors of the highest value to the comm wealth.

Nepotism is not confined to Popes, Kings, Presidents and Generals; it may sadly impair the influence and usefulness of sanitary boards State and municipal governments.

Since the great epidemic of 1878 the medical mind has been to a l extent deranged on the subject of *yellow fever*, and the professional public mind has been concentrated upon this disease, which prevails at long intervals of time, to the almost total neglect of the considera of those causes of disease and death which are ever active and whicl far more potent and destructive.

The results of the agitation of 1880 and 1881 have, however, establi the important fact that the President of the Board of Health of the S of Louisiana has enjoyed the confidence of the health authorities of T Alabama, Kentucky and Missouri, to such an extent that any orga system of quarantine against *healthy* New Orleans has been impossibl spite the doubting, if not hostile, attitude of certain interested parties

FOOD RESOURCES OF LOUISIANA.

The soil of this State, in virtue of its variations in composition and vation, is adapted to the successful cultivation of sugar cane, rice, c corn, wheat, rye, barley, oats and all the fruits common to the temp and sub-tropical zones. Louisiana possesses, perhaps, the most fertil of any of the States of this Union, in virtue of the large proportions alluvium of the Mississippi Valley enclosed within her borders.

As is well known, a wide belt of recent alluvium borders the Missi river from the mouth of the Ohio to the Gulf, seventy-five miles w the greatest expansion at Napoleon, and twenty-five miles in its gr contraction at Natchez and Helena. The area of the alluvial tract the delta is 19,450 square miles. The depth of the alluvial deposits Cairo to New Orleans, ranges between twenty-five and forty feet.

he area of the delta of the Mississippi river, which lies almost wholly in the borders of Louisiana, assuming that it begins where the river s off its first branch to the sea, namely, at the mouth of Bayou Atfalaya, is estimated at 12,300 square miles. This would be at the mouth Red River, in latitude 31°, whilst the mouths of the Mississippi are in ude 29°; so that the delta extends through two degrees of space. entire delta is elevated but a few feet above the level of the Gulf of ico, and from its fertile soil, and proximity to the Mississippi river and ous, is perhaps as fertile as any body of land in this or any other conent, and is admirably adapted to the cultivation of rice and the sugar .

RICE.

e production of rice has been steadily increasing in Louisiana, and the ity of this invaluable grain will compare favorably with the famed rice outh Carolina and Georgia.

has been asserted that a larger number of the inhabitants of the globe upon rice than upon any other grain, and here in Louisiana we have of the most important articles of human food produced in the greatest ndance and in *absolute purity.* The very form and nature of the beauti snow-white grain of the *clean rice* absolutely precludes the possibility duleration.

URITY OF THE SUGAR AND MOLASSES OF LOUISIANA.

MICAL EXAMINATION OF SEVERAL KINDS OF MOLASSES, OFFERED IN THE MARKETS OF NEW ORLEANS, LA.

[oseph Jones, M. D., Professor of Chemistry in the Medical Department of the University of Louisiana.]

e method of manufacture of sugar pursued by the planters of Louisias I have determined by actual investigation and analysis, insures not good sugar, but also pure and wholesome molasses.

response to the request of sugar refiners and merchants, I made a ul chemical analysis of the most important varieties of molasses and p offered for sale in New Orleans, with the following results:

ntlemen—In accordance with your request, I have submitted the les of molasses furnished, to careful chemical analysis, with the folng results:

is examination has been executed with care, and has been extended s to embrace the points of interest, in a sanitary as well as in a nercial point of view.

e public, as well as the sugar manufacturer and refiner, is interested e investigation of the quality and purity of a product which is daily umed in large quantities as an article of food.

is report also contains matter of special importance to the sugar ters of Louisiana. The value of one of the staple products of Louisiana riously threatened by the importation of inferior kinds of molasses Northern manufactories.

NO. I.—LOUISIANA MOLASSES.

ysical Properties.—Clear, rich, brownish red color. No deposit. Free all dark particles, specks or impurities.

eet, pure saccharine taste.

e Louisiana molasses leaves no unpleasant taste in the mouth, and it ll established that it never blackens the teeth.

Chemical Properties.—Ferrocyanide of potassium, ferricyanide of pota sium, tincture of galls, and other tests of iron, produced not the slighte discoloration.

The absence of the salts of iron from the Louisiana molasses was re dered still further evident by the character of the ash obtained by carefi incineration. Each gallon yields less than 350 grains of white ash, co sisting almost entirely of the carbonate and sulphate of lime, and t chlorides and carbonates of soda and potassa, with only slight traces iron.

The characteristic tests for lead and other metals, in like manner ga no indications of metallic impurities.

Solutions of nitrate of silver, chloride of barium and oxalate of ammon produced only that slight turbidness in solutions of Louisiana molas which is characteristic of all products from the juices of such plants the sugar cane.

Specific gravity of Louisiana molasses, 1377.8.

The specific gravity in this case, as in all others recorded in this repo was accurately determined upon the balance, and not in the ordinary a less accurate method with the saccharometer.

The following is the composition of 70,000 grains of Louisiana molas as determined by chemical analysis.

SEVENTY THOUSAND GRAINS OF LOUISIANA MOLASSES CONTAIN:

Sugar.

Sugar, including both varieties, Crystalizable and Uncrystalizable, grains 53,845.20.....	Crystalizable sugar, grains	41,845.2
	Uncrystalizable " "	12,000.0

Saline Constitutents.

Carbonate and Glucate of Lime.....	grains 86.3
Sulphate of Lime.....	" 142.8
Chlorides of Sodium and Potassium.....	" 156.1

Seventy thousand grains, yielded upon analysis, the individual components o salts in the following quantities .

Lime.....	grains 107.1
Chlorine.....	" 95.0
Sulphuric Acid.....	" 89.0

In the determination of the amounts of crystalizable and uncrystaliz sugar, the method of M. Barreswill was employed in this case, as in all other analyses recorded in this report.

The method of Barreswill is founded upon the following facts :

Grade sugar forms definite but unstable combinations with the alk bases; and their compounds, even at ordinary temperatures, gradu undergo change. Their solution, which is at first strongly alkaline comes neutral, owing to the formation of a powerful, colorless but un talizable acid (*glucic acid*), which remains in combination with the bas

Glucic acid, when boiled with water, absorbs oxygen and becomes br A new acid which is not crystallizable, termed by Mulder apoglucic is formed. If an alkaline solution of grape sugar be heated, the sug rapidly destroyed, or converted into a dark brown acid body, te *melassic acid.* This body has a powerful affinity for oxygen, and boiled with an alkaline solution, to which a salt of black oxide of co has been added, speedily reduces the black oxide of this metal to the dition of the red oxide.

The amount of sugar which any mixture contains may be estimat an alkaline solution of tartrate of copper and potash of known streng

Fehling recommends for the preparation of the standard copper sol the following proportions, as reduced to English weights; 1 ounce of

lized sulphate of copper; three ounces of cream of tartar; one and a f ounces of pure carbonate of potash; fourteen or sixteen ounces of a ution of caustic soda (Sp. Gr., 1.12), and water, until the solution meas- s 15,160 water grains. Two hundred measured grains of this solution tain a quantity of copper, which would be reduced by one grain of sugar ucing ten equivalents of the black oxide of copper to the state of oxide.

A given volume of this solution is placed in a porcelain capsule and ted nearly to its boiling point. The solution of sugar to be tested is n added by degrees from a burette, until the addition of the syrup ceases roduce any further precipitate. The proportion of sugar which is sent in the liquid will be inversely as the volume of the saccharine solu- consumed.

ane sugar, however, does not reduce the alkaline solution of tartrate of per; consequently, no indication of the presence of cane sugar is af- led by this re-agent. Nevertheless, a quantative determination, even of variety of sugar, may be effected by means of this method, provided a given volume of the saccharine liquid, accidulated slightly with huric acid, be diluted with water and boiled two or three hours. The e sugar is thus converted into fruit sugar, and on diluting this liquid water until it occupies a definite volume, the proportion of altered ar which it contains may be ascertained.

upposing both kinds of sugars to be present, a preliminary experiment ade before boiling with acid, in order to estimate the amount of fruit f grape sugar, and by deducting this from the quantity found after ulating the liquid and boiling, the proportion of the cane sugar is as- ained.

he results of the preceding analysis establishes not only the high com- cial value of Louisiana molasses, but also its great purity and absolute iom from all injurious ingredients.

ouisiana molasses is therefore valuable, not only as a source of crystalli- e sugar, but also as an article of food of the most nutritious and supe- quality.

NO. II.—CUBA MOLASSES.

hysical Properties.—Dark reddish brown color, with black flakes and ks of carbonized organic matters. Upon standing, deposited a slight, colored, inclining to black sediment.

iste peculiar to Cuba molasses, and giving the impression of saline edients.

emical Properties.—Ferrocyanide of potassium, ferricyanide of potas- and tincture of galls, revealed the presence of the oxides of iron in l amount. Upon chemical analysis of the molasses in solution, and e saline ingredients upon incineration, no other metallic salts were de- d.

lutions of chloride of silver, chloride of barium and oxalate of amo- roduce bulky precipitates.

pon incineration, the saline residue amounted to 2100 grains in 70,000; the saline constituents presented a reddish brown color, from the pres- of the oxide of iron.

ecific gravity 1376.4.

e following is the composition of 70,000 grains of Cuba molasses:

70,000 GRAINS OF CUBA MOLASSES CONTAIN:

Sugar.

Sugar, including both varieties, Crystallizable and Uncrystallizable grains 46,666 { Crystallizable sugar, grains 30,194 / Uncrystallizable " " 16,472

Saline Constituents.

Carbonates of Soda, Potassa and Magnesia	grains 350.94
Carbonate of Glucate of Lime	" 634.10
Sulphate of Lime	" 254.27
Chloride of Sodium and Potassium	" 738.19
Sulphate, Carbonate and Glucate of Iron	" 122.50

Seventy thousand grains yielded, upon analysis, the individual components of th salts in the following quantities:

Lime	grains 459.27
Chlorine	" 439.90
Sulphuric Acid	" 149.96
Salts of Iron	" 122.50

NO. III.—LONG ISLAND FACTORY MOLASSES.

Physical Properties.—Dark reddish brown, almost black color. Taste sim lar to that of Cuba molasses. Contains black specks, as in the case Cuba molasses.

Specific gravity, 1391.7.

Chemical Properties.—Ferrocyanide and ferricyanide of potassium a tincture of galls gave evidence of the presence of the salts of iron.

The saline matters obtained by incineration gave evidence of the pr ence of the oxide of iron in the brownish red color. The characteris tests of such metels, as lead, tin and copper, failed to reveal their presen either in solutions of the crude molasses, or in solutions of the saline ing dients. the saline ingredients obtained by incineration were even m abundant than in the Cuba molasses, being 2625 grains in 70,000 grains Long Island Molasses.

The following is the composition of 70,000 grains of Long Island fact molasses:

70,000 GRAINS OF LONG ISLAND FACTORY MOLASSES CONTAIN:

Sugar.

Sugar, including both varieties, Crystallizable and Uncrystallizable, 38,888.88 grs. { Crystallizable sugar, grains 20.222.88. / Uncrystallizable " " 18,666.00.

Saline Constituents.

Carbonates of Soda, and Magnesia	grains 488.4
Carbonate and Glucate of lime	" 779.6
Chlorides of Sodium and Potassium	" 894.3
Sulphate of Lime	" 259.4
Sulphate Carbonate and Glucate of Iron	" 203.0

Seventy thousand grains yielded the individual components of the salts in the fo ing quantities:

Lime	grains 543.0
Chlorine	" 545.0
Sulphuric Acid	" 152.6
Salts of Iron	" 203.0

NO. IV.—100 BARRELS NORTHERN MOLASSES.

Physical Properties.—Dark, reddish brown color. Unpleasant taste. ing the astringent, metallic taste of the salts of iron, and more espec of copperas, upon the tongue.

This kind of molasses is said to blacken the teeth and derange the bo

Ferrocyanide and ferricyanide of potassium and tincture of galls. other characteristic tests of the salts of iron, gave decided precipitates this metal. When a solution of ferrocyanide of potassium is added solution of this molasses it is changed to a deep blue color, from the fo tion of prussian blue.

The ash obtained by incineration, which amounted to 1750 grains in 70,-
), was colored of a deep reddish brown color, from the presence of the
des of iron.

Both the crude molasses in solution, and the ash obtained by incinera-
n, were carefully tested for various metallic salts, as those of lead, copper
l tin, but no other metallic body besides iron was discovered.

pecific gravity 1372.5.

70,000 GRAINS (100 BARRELS) OF NORTHERN MOLASSES CONTAIN:

Sugar.

gar, including both varieties, Crystalliza- ble and Uncrystallizable 40,000 grains	Crystallizable sugar, grains		20,000
	Uncrystallizable " "		20,000

Saline Constituents.

Carbonates of Soda, Potassa and Magnesia	grains	169.05
Carbonate and Glucate of Lime	"	250.77
Sulphate of Lime	"	428.57
Chlorides of Sodium and Potassium	"	551.61
Salts and Oxides of Iron	"	350.00

venty thousand grains yielded the individual components of the salts in the follow-
i quantities:

Lime	grains	316.9
Chlorine	"	311.4
Sulphuric Acid	"	252.1
Salts and Oxides of Iron	"	350.0

SICAL PROPERTIES—DARK BROWNISH, ALMOST BLACK COLOR, WHEN SEEN IN MASS.

No. V. Seventy-nine barrels Northern Syrup.

our taste, but leaves a decided astringent and metallic taste in the
th, similar to that of a solution of copperas.

he characteristic tests for iron, as ferrocyanide and ferricyanide of
ssium and tincture of galls, gave heavy precipitates, and abundant
ences of the presence of the salts of iron in considerable amounts.

he characteristic tests for lead, tin, copper and other metallic salts,
ied to the molasses in solution, and to the saline constituents, revealed
r absence.

he salts of iron were the only metallic compounds present.

he saline constituents, which amounted to 1750 grains in 70,000 grains
olasses, were discolored of a deep brown color from the presence of
salts of iron.

he prussian blue precipitated from this Northern molasses was collected
a filter; it made fully as striking an appearance as in the case of the
eding sample.

he following is the composition of 70,000 grains of these seventy-five
els Northern syrup.

ENTY THOUSAND GRAINS (SEVENTY-NINE BARRELS) OF NORTHERN SYRUP CONTAIN.

Sugar.

gar, including both varieties, Crystaliza- le and Uncrystallizable, 40,000 grains	Crystallizable sugar, grains		18,461.20
	Uncrystallizable " "		21,538.00

Saline Constituents.

arbonates and Glucates of Soda, Potassa and Magnesia	grains	437.62
arbonate and Glucate of Lime	"	328.36
ulphate of Lime	"	561.22
hlorides of Sodium and Potassium	"	709.80
ulphate, Carbonate, Glucate and Oxide of Iron	"	243.00

enty thousand grains yielded the individual components of the salts in the follow-
i quantities.

ime	grains	415.00

Chlorine	"	430.50
Sulphuric Acid	"	330.13
Salts of Iron	"	343.00

The results of the preceding analyses have been calculated for a uniform quantity in each analysis of 70,000 grains, because this is precisely the weight of one gallon of distilled water at 60°.

Thus the weight of one gallon of these various samples of molasses is, respectively:

Weight of one gallon of Louisiana molasses	grains	96,446
Weight of one gallon of Cuba molasses	"	95,648
Weight of one gallon of Long Island molasses	"	97,419
Weight of one gallon (100 barrels) of Northern molasses	"	96,075
Weight of one gallon (75 barrels) of Northern molasses	"	96,419

If, therefore, the analyses be all calculated for 100,000 grains, the proportions would represent very nearly those of one gallon of each of the samples of molasses reduced to a uniform standard. The figures would be slightly in excess of the actual amounts contained in each gallon, but for practical and commercial purposes would be sufficiently accurate.

The following table presents the actual amounts of the constituents entering into 100,000 grains, or very nearly one gallon of each of these varieties of molasses:

TABLE GIVING THE COMPOSITION OF 100,000 GRAINS (VERY NEARLY ONE GALLON) OF EACH OF THE VARIETIES OF MOLASSES, ANALYZED IN THE PRESENT REPORT.

CONSTITUENTS.	Louisiana Molasses. No. 1. Grains.	Cuba Molasses. No. 2. Grains.	Long Island Factory Molasses. No. 3. Grains.	One hundred Barr'ls Northern Molasses No. 4. Grains.	Seventy-nine Barr'ls Northern Molasses
Both varieties of sugar, crystallizable and uncrystallizable	76927	66665	55555	57142	57
Crystallizable sugar	59778	43134	28889	28571	2(
Non-crystalilizable sugar	16921	23521	20665	28571	3(
Saline Ingredients.					
Carbonates of soda, potassa, etc	.....	501	697	241	
Carbonate and glucate of lime	123	905	1113	358	
Sulphate of lime	204	363	370	612	
Chloride of sodium and potassium	213	1054	1277	788	
Salts of iron	.....	175	288	500	
Total saline ingredients	550	3000	3750	2500	

The *percentage* of the different ingredients may readily be determined from the preceding table, simply by cutting off the three last figures.

The following conclusions have been drawn from the preceding analys

1. The Louisiana molasses is decidedly superior in appearance and ta to the other four samples of molasses.

2. The proportion of crystallizable sugar is greatest in Louisiana lasses, whilst the proportion of uncrystallizable sugar is the least.

Thus, the proportions of sugar in the different samples are as follo In Louisiana molasses, 59 per cent of crystallizable sugar, and 16 per uncrystallizable sugar; in Cuba molasses, 43 per cent of crystalliz

gar, 23 per cent uncrystallizable sugar; in Long Island molasses, 28 r cent crystallizable sugar 26 per cent uncrystallizable sugar; in 100 rrels Northern molasses, 28 per cent crystallizable sugar, and 28 per nt uncrystallizable sugar; in 79 barrels Northern syrup, 26 per cent stallizable sugar, and 30 per cent uncrystallizable sugar.

3. The Louisiana molasses is, therefore, the best for the sugar refiner, cause it contains the largest amount of crystallizable sugar.

4. Molasses consists of a concentrated solution of the products of the nversion of raw sugar into caramel and other products of decomposi- m, which, however, compose the smallest portion of the entire mass. It ntains, also, those salts which are not precipitated by lime, and which ve accumulated; also, certain soluble salts of lime and combinations h the sugar; also, compounds of sugar with the salts; and lastly, a id of gum or mucus.

The solution of all these substances is necessarily saturated with raw gar. In a practical point of view, therefore, without reference to the eign ingredients, molasses is a solution containing sugar in two modifi- ions, in the crystallizable and uncrystallizable condition.

The sugar trade will only be established upon a sure footing when those erested in it are enabled, at any time, to obtain an accurate knowledge the real intrinsic value of the raw material.

The value of these goods consists, according to circumstances, either in amount of saccharine matter generally, or in the amount of crystal- ble cane sugar, or in the entire quantity of both which they contain.

In other words, a test is very much required, or a means of accurately rtaing this value readily, without any special experience or knowledge, at in inconsiderable cost and trouble.

test of this kind would be invaluable to refiners, and for the collection luties and imports.

o part of the business of the refiner is of so great importance as the chase of the raw material, since a knowledge of the quantity of raw ar can only be attained by long practice and experience.

person posessing a sound knowlege of the markets with only a super- l knowledge of the technical processes of manufacture, will have a t advantage over the most able practical refiner, who is without ex- ence in the purchase of raw sugar.

will be also quite impossible to preserve the integrity of the principle n which the duty is levied, from frauds and the like, so long as the duty evied upon the external forms and appearances of the produce, and from want of an accurate test and the real value of the article.

he loss of sugar in the process of abstraction from the cane, and sub- ent boiling is very great. Only two-thirds of the juice are actually ob- ed by the ordinary process, and these only contain 12 per cent of the r contained in the fresh cane, so that 6 per cent of the sugar is left in bagasse or fibrous structures of this sugar cane.

the cane juice, as first expressed, the entire amount of sugar is of crystallizable variety, and varies in amount from 18 to 22 per cent, mineral matter varying from 0.14 to 0.21 per cent.

is, therefore, worthy of note, that by the present process of boiling, he 18 or 20 per cent of crystallizable cane sugar which is contained in sugar cane, not more than 7½, or between 6 and 10 per cent is actually ined, or not quite one-half. Two causes are principally active in pro- ng this loss: First, the defective method of exposing the juice; second, chemical changeability of the sugar, which, during the course of boil-

ing, gives rise to the production of the well known secondary product, molasses or uncrystallized sugar.

The uncrystallizable sugar is capable of being substituted for cane sugar only in a very limited number of cases, and will by no means supply its place for sweetening tea or coffee, or other alimentary substances. For these purposes, it is, however, that a large amount of sugar consumed is employed. The causes for this arise from greater difficulty of crystallizing grape sugar, which is a guarantee to the public of its purity, and its lesser sustaining power and degree of solubility.

Both kinds of sugar are soluble, in all proportions, in boiling water; but under similar circumstances, 100 parts of grape sugar require 133 parts, or according to others 163 parts of cold water; while 100 parts cane sugar only require 33 parts to be completely dissolved. In both cases, whether the water is hot or cold, the solution of the grape sugar takes place more slowly; and in order to produce an equal sustaining effect, two-and-a-half times as much grape sugar as cane sugar is required.

Powdered grape sugar has a flowery taste, when placed upon the tongue and very gradually becomes sweet as it dissolves, leaving a mucilaginous taste at the same time; cane sugar gives a perfectly sweet taste, in a much greater degree, and in a direct manner.

In order to render the two kinds upon an equality, in an economical point of view, five pounds of grape sugar should only cost as much as two pounds of cane sugar.

5. The Louisiana molasses contains far less inorganic salts than the other varities of molasses. Thus a gallon of Louisiana syrup contains about 500 grains of salts, whilst two other varieties contain from 2500 to 37[illegible] grains per gallon.

This point is of great interest to the sugar manufacturer and refiner because the presence of these salts explains not only the difficulty attending the crystallization of molasses, but also its power of absorbing moisture from the air, which it communicates to the raw sugar. It is well known that many kinds of raw sugar melt into syrup when exposed to the atmosphere.

These salts also account for the purging action of the molasses.

The Louisiana molasses may be considered as almost entirely free from these impurities.

6. The Louisiana molasses is entirely free from iron salts, whilst in the samples of Northern molasses these salts of iron vary from 280 to [illegible] grains per gallon. Cuba molasses in like manner contains iron salts, but to a less degree.

The salts of iron contained in the Northern molasses, are injurious to the health, and especially to children, and at the same time they *blacken* and *injure* the teeth.

7. In every respect the Louisiana molasses is superior to each of the other samples of molasses, and combines richness and purity of composition with an elegant appearance and pure taste and wholesome action. As an article of food it is far superior to the Northern molasses, and should for this purpose, command at least four-fifths more than the price of the latter.

COTTON SEED OIL.

On submitting to strong pressure the oily seeds of the cotton plant (*Gossypium barbadense*), a valuable and agreeable smelling and pleasant tasted oil is obtained, which, in a purified state, is now employed for the usual purposes in commerce and in the arts, and in pharmacy, for which other brands of oils and fats are employed.

The production of cotton seed oil has been steadily increasing, and large portations of the oil and cake are annually made from New Orleans to gland, France and other European countries.

As the cotton seed oil shipped to France, Spain and Italy is often re-ned to this country labled "Olive Oil," it is of great importance to the zens of the United States to ascertain whether cotton seed oil is a per substitute for olive oil—whether, in fact, it be wholesome.

This inquiry is entirely pertinent, because it is well known that the root the cotton plant is a powerful and even dangerous medicine.

have endeavored to examine this question with care, and have em-yed the cotton seed oil as a local application, and as the basis of lini-nts in the treatment of various painful affections, as rheumatism, with rked benefit, and no instance has come to my knowledge in which its use a substitute for olive oil has produced any deleterious effect. The owing facts, also established by a careful personal investigation of the ritive value and chemical composition and agricultural uses of the ton seed, have led me to believe that cotton seed oil may be substituted h impunity for olive oil, both as food and as a basis for liniments.

n Europe the cotton seed cake is regarded with high favor, both on ac-nt of its great nutritive value and as a superior manure. The value of ton seed as an efficient fertilizer has long been recognized by experi-ed planters in the Southern, Atlantic and Gulf States.

PORT ON THE NUTRITIVE AND AGRICULTURAL VALUE OF DECORTICATED COTTON SEED CAKE AND MEAL.

BY JOSEPH JONES, M. D.

n accordance with the request of the directors and officers of the isiana Oil Company, I have carefully inspected the works and subjected cotton seed and its products to careful chemical examination, with the owing results:

n submitting to strong pressure the oily seeds of the cotton plant (*Gos-ium barbadense*), a valuable and agreeable smelling and pleasant tasted s obtained, which in a purified state is now employed for the usual poses, in commerce and in the arts, and in pharmacy, for which other ds of oils and fats are employed.

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SICAL PROPERTIES AND CHEMICAL CONSTITUTION OF COTTON SEED E AND MEAL AS MANUFACTURED BY THE LOUISIANA OIL COMPANY

ne cotton seed cake and meal, prepared by the Louisiana Oil Company, anufactured from the shelled or decorticated seed, and is far superior to obtained from the whole seed, which contains less oil, and a much ter proportion of ligneous fibre.

ne decorticated cotton seed cake has a rich yellow color, is free from any ng or disagreeable smell, and has an agreeable taste; it is almost entirely from the dark brown, comparatively valueless seed shells; and it does contain any large amount of mucilage, nor anything that produces on

mixing with water, a volatile, pungent or injurious essential oil. Cattle take to it at once, and rapidly improve in flesh and fat when fed upon it; and so valuable is this article regarded by the most experienced and intelligent European farmers, for the feeding of stock, that it readily commands from £6 to £8 per ton.

Owing to its superior qualities as food, it offers considerable economic advantages to the feeders of stock in comparison not only with other varieties of cake, but also with corn and wheat.

The chemical composition of the decorticated cotton seed cake is presented in the following tables:

CHEMICAL ANALYSIS BY JOSEPH JONES, M. D., OF DICORTICATED COTTON SEED CAKE AND MEAL, MANUFACTURED BY LOUISIANA OIL COMPANY.

One hundred parts of decorticated cotton seed cake and meal contain:

Water	8.65
Oil	18.75
Albuminous compounds, (*flesh forming principles*), capable of yielding 6.5 per cent of Nitrogen; valuable as a fertilizer; in the soil undergoes rapid change and yields Ammonia, Carbonic Acid and Phosphates	38.50
Sugar, Starch, Gum, Mucilage, digestible fibre, &c. (Heat producing matter), valuable as food	26.60
Mineral matters; ash composed chiefly of phosphate of lime and potash 7.5 per cent capable of forming blood and bones in stock, valuable as a fertilizer: composed of	
Phosphate of Lime	3.04
Phosphate of Potassa	3.51
Chlorides, containing chlorine 0.18	0.30
Sulphates, containing sulphuric acid 0.19	0.43
Carbonates of lime and magnesia	0.20
One hundred part of ash of seed, contain:	
Phosphate of lime	30.62
Phosphate of potassa	46.87
Chlorides of sodium and potassium, containing chlorine 2.42	3.97
Sulphates of soda, potassa and magnesia, containing sulphuric acid, 2.59	5.65
Carbonates of lime and magnesia	2.85

NUTRITIVE AND AGRICULTURAL VALUE OF COTTON SEED CAKE AND MEA

The nutritive and agricultural value of decorticated cotton seed ca will be readily seen from the following table giving the composition per to

One ton of decorticated cotton seed cake contains:

Oil	lbs. 375.00
Albuminous compounds (*flesh-forming principles*), capable of yielding 130 lbs. of nitrogen	lbs. 770.00
Starch, sugar, gum, mucilage and digestible fiber (heat producing elements)	lbs 532.00
Mineral matters, composed chiefly of phosphates of lime and potash, capable of forming blood and bones, and valuable as a fertilizer, especially to grain, 150 lbs.	
Phosphate of lime	60.80
Phosphate of potash	70.20
Chlorides	6.00
Sulphates	8.40
Carbonates of lime and magnesia	4.00

Each ton of decorticated cotton seed cake will yield 375 pounds of 770 pounds of albuminous compounds (*flesh-producing principles*), pounds of sugar, starch, gum, mucilage and wood fibre (*heat-produ agents*), and 150 pounds of salts. Total nutritive elements in one ton, 1 pounds. It is fair to estimate the value of this food, rich in oil, nitro ized matters and phosphates, at two cents per pound. This estimat under rather than above the nutritive value in the feeding and fatte of stock.

Nutritive value of one ton of decorticated cotton seed cake and meal, manufactured by Louisiana Oil Company, $36.74.

In computing the agricultural value, it should be observed that each ton is capable of yielding 130 pounds of nitrogen, which alone may be estimated as possessing an agricultural value of from $26 to $32.50, and the phosphate of lime and potash possess an agricultural value of $7. The agricultural value does not, therefore, differ materially from the nutritive value.

RELATIVE VALUE OF COTTON SEED CAKE AND MEAL, AND PRACTICAL CONCLUSIONS.

1. The proportion of oil is higher than in the best linseed cake, which rarely contains more than from 10 to 13 per cent of this ingredient which so valuable for supplying fat to animals.

2. Decorticated cotton seed cake contains a very high and much higher percentage of nitrogenized flesh-producing matter than linseed cake, corn, wheat, oats, barley, beans and peas, and this renders it especially valuable as food for young stock and dairy cows. As a large proportion of the nitrogen of the food is not assimilated in the system, but passes away with the fæces and urine, the excrements produced by stock fed upon cotton seed cake will be found particularly valuable as manure.

3. The proportion of indigestible wood fibre in decorticated cotton seed cake is small, and not larger than in the best linseed cake.

4. The ash of cotton seed cake is rich in bone material; thus each ton is capable of yielding sixty pounds of phosphate of lime and seventy pounds of phosphate of potassa.

5. The physical condition of the cotton seed cake and meal, is excellent, and eminently suited to the digestion and nutrition of animals.

6. At this late day no planter in the Southern, Atlantic and Gulf States is ignorant of the fact that cotton seed will compare favorably in its effects with the best commercial fertilizers.

In the application of cotton seed as a manure the planter should act upon the principle that animal and vegetable manures should always be applied if possible in their natural condition, and should never be burned under the erroneous idea that the ash alone is valuable.

The organic matters of the cotton seed will generate ammonia, and at the same time during their decomposition, the salts will be slowly given out and supplied to the plants continuously during their growth.

The ashes of cotton seed, on the other hand, are readily washed by the rains, below where the roots of plants can penetrate. It will therefore greatly deteriorate if not completely destroy the value of cotton seed as a manure to burn the organic matter.

7. That cotton seed cake and meal is a potent fertilizer is evident not only from its acknowledged beneficial effects when applied to growing crops, but also from the following well established considerations:

Plants require a large portion of vegetable and animal matter, to afford a supply of carbon, in the shape of carbonic acid, and of nitrogen in the form of ammonia, both of which are evolved during the decomposition of organic substances. Cotton seed cake is most valuable to grain crops, because the seed of plants is, in all instances, the most highly azotized portion, and all plants require a supply of nitrogen to perfect their seed; which nitrogen cotton seed cake possesses in large proportion.

Cotton seed cake is quick in its effects, because fermentation and putrefaction take place almost immediately after its application to the growing plants, and carbonic acid and ammonia are supplied to the roots of plants in large proportions.

The plant in its infancy feeds upon or is developed out of the matter of the seed; but after it has developed certain fibres it begins to take up nourishment from the soil, while the green leaf or shoot which it has sent upwards extracts carbonic acid from the air; if the roots find no food, near they increase in number and length, and spread over a large surface; and in poor soils, from this cause, plants have an immense number of fibrous roots and a poor stunted stem, the numerous roots having been formed at the expense of matters which should have assisted the growth of the stem. Cotton seed cake, from its rapid decomposition and the comparativeiy large amounts of carbonic acid and ammonia evolved, supplies the young plants with the best liquid and gaseous food at the most critical period, and consequently enables the plants to develop stouter stems and more perfect and numerous leaves; for it appears to be well established that the sooner the plant escapes from the state of transition in which it derives its food from the seed, as well as from the soil and atmosphere, the sooner will its organs for extracting its food from the air and the soil be developed, the more vigorous will be their growth, and the more efficient their use in the process of vegetation.

Cotton seed cake ensures also a better supply of moisture to the plant, because it possesses the power of absorbing from twice to ten times as much atmospheric moisture as the finest soils.

8. Cotton seed cake and meal are greatly superior to farm yard manure, in soluble organic matters, and are equal to it in phosphates; and one ton equals in agricultural value, at least from ten to eighteen tons of farm yard compost.

9. One ton of cotton seed cake contains 150 pounds of saline matters chiefly phosphates.

We have in this fact a strong argument for the use of cotton seed as manure, in order that these salts should be returned, which are essentia to the preservation of the fertility of the land.

The great advantage resulting from the appllcation of cotton seed as manure for corn is referable to a high percentage of phosphoric acid an potash in corn. One thousand pounds of cotton seed are capable of yiel ing the necessary potash for about 7000 pounds of corn, and phosphor acid for about 2200 pounds of the same grain.

Each ton of decorticated cotton seed cake will yield 375 pounds of o 770 pounds of albuminous compounds (*flesh producing principles*), 532 poun of sugar, starch, gum, mucilage and woody fibre (heat producing agen and 150 pounds of salts. Total nutritive elements in one ton, 1827 pound

It is fair to estimate the value of this food, rich in oil, nitrogenized ma ters and phosphates, at two cents per pound, or $36 74 per ton. In co puting the agricultural value, it should be observed that each ton is ca ble of yielding 130 pounds of nitrogen, which alone may be estimated possessing an agricultural value of from $26 to $32 50, and the phospha of lime and potash posesses an agricultural value of $7.

The agricultural value does not, therefore, differ materially from the tritive value.

The decorticated cotton seed cake has a rich yellow color, is free fr any strong or disagreeable smell and has an agreeable taste; it is almost terely free from the dark brown, comparatively valueless seed shells; it does not contain any large amount of mucilage, nor anything that duces in mixing with water a volatile, pungent or injurious essential Cattle take to it at once, and rapidly improve in flesh and fat when upon it; and so valuable is this article regarded by the most experien

nd intelligent European farmers, that it readily commands from £6 to £8 er ton.

Owing to the superior qualities as food, it offers considerable economic dvantages to feeders of stock in comparison not only with other varieties f cake, but also with corn and wheat.

The preceding views have led me to the conclusion that cotton seed oil osesses valuable properties as a nutritive, oleangenous heat producing od for man, and as a substitute for olive oil and butter. I am at present ngaged in testing its relative value to cod liver oil, in the treatment of hthisis pulmonalis.

LOUISIANA ROCK SALTS FROM PETITE ANSE ISLAND.

Salt should be regarded not merely as a condiment, but as a most valable mineral constituent of our food and of the solids and fluids of the uman body.

Fortunately Louisiana produces her own salt of the purest quality and vast and unknown quantities in Petite Anse or Avery's Island.

HEMICAL EXAMINATION OF LOUISIANA ROCK SALT AND OF TURK'S ISLAND SALT, WITH CRITICAL COMPARISONS WITH OTHER VARIETIES OF SALT FROM VARIOUS COUNTRIES, BY JOSEPH JONES, M. D.

LOUISIANA ROCK SALT.

Louisiana rock salt presents the form, appearance and optical properties pure chloride of sodium. The large crystalline masses are so perfectly ansparent and free from all extraneous matter and are so uniform in their ructure and density that they would be suited in all respects for the most licate philosophical experiments upon the transmission of heat through fferent media. The entire mass of the samples selected was made up of ystals and fragments of crystals, derived from the cube, the primitive rm of chloride of sodium. The crystals present a foliated texture and stinct cleavage; they feel when rubbed in the hand dry, and left no im-ession of moisture or of saline matter.

The sample of Louisiane rock salt submitted to analysis, as well as the rge solid masses, weighing several tons, are the purest and finest sam-es of rock salt that have ever come under my observation.

One hundred grains of Louisiana rock salt yield upon analysis:

Chloride of Sodium (common salt)	99,617
Sulphate of Lime	0.318
Sulphate of Magnesia	0.062
Moisture (dried at 300°)	0.093

It will be observed from this analysis that the Louisiana rock salt con-ins less than one-half of one per cent (0.473) of those substances which ay be considered as foreign, viz: moisture, and sulphates of lime and agnesia; and which are found in greater or less quantities, according to eir purity, in almost all samples of salt.

The absence of both chloride of calcium and chloride of magnesium is important as these salts absorb moisture readily from the atmosphere, and when existing to even a limited extent in salt impairs more or less its value, by rendering it more hygroscopic. Meats cured with salt abounding in the chloride of calcium are more prone to absorb moisture from the atmosphere.

TURK'S ISLAND SALT.

The sample of Turk's Island salt submitted to my examination presented a less uniform appearance; some of the crystals being semi-transparent, whilst others were opaque. The differences were due rather to physical than chemical properties.

One hundred grains of Turk's Island salt was found upon analysis to contain:

Chloride of Sodium	98.880
Sulphate of Lime	0.569
Sulphate of Magnesia	0.185
Moisture	0.341
Insoluble matters (sand' etc)	0.040

It will be seen from this analysis that the Turk's Island salt, although excellent in quality and yielding a large proportion of cloride of sodium, at the same time is somewhat inferior to the Louisiana rock salt. The Turk's Island salt yields a little over one per cent (1.12) of foreign matters, which add nothing to its antiseptic properties; whilst the Louisiana rock salt yields less than one half of one per cent.

RESULT OF THE COMPARISON OF THE CHEMICAL COMPOSITION OF LOUISIANA ROCK SALT WITH THAT OF TURK'S ISLAND.

From this comparison we conclude:

1. The Louisiana rock salt may be considered as essentially pure chloride of sodium.

2. The Louisiana rock salt is superior in apperance and in physical properties to the Turk's Island salt.

3. The Louisiana salt contains less moisture and less adventitious matters than the Turk's Island.

4. The Louisiana salt contains nothing injurious whatever to meat, and is essentially and eminently adapted for all the uses to which this valuable mineral is applied in the preparation of food, or in the arts and agriculture.

It remains that a comparison should be instituted between the Louisiana rock salt and that of various other localities.

The tables on the following page present the composition of salt derived from different parts of the earth, and from the sea water and brine springs.

ANALYSIS OF VARIETIES OF COMMON SALT FROM EUROPE AND AMERICA.

ORIGIN OF SALT—NAME OF CHEMIST.	REMARKS.	Chloride of Sodium.	Chloride of Magnesium.	Chloride of Calcium.	Sulphate of Soda.	Sulphate of Magnesia.	Sulphate of Lime.	Clay & Insoluble matters.	Oxide of Iron.	Other Salts.
Louisiana Rock Salt—Joseph Jones, M. D.	Moisture separated at 300° F.	99.62	.....	.....	....	0.06	0.31	.....	.....	.....
Petit's Island Salt—Joseph Jones, M. D.	Moisture separated at 300° F.	98.88	.....	.....	....	0.18	0.56	0.04	.....	.....
Salt from Lake Salem of Victoria { white	Amount of moisture not stated in analysis	99.30	.....	.....	...	.....	0.005	0.02	.....	.....
Salt from Lake Salem of Victoria { red	Amount of moisture not stated in analysis	99.80	.....	.....	....	.....	.....	0.002	.....	.....
Crushed Cheshire Salt 66....	Amount of moisture not stated in analysis	98.33	0.02	.....	....	.....	0.65	.....	0.002	.....
Salt Springs, Schonbeck, Westphalia	Amount of moisture not stated in analysis	93.90	0.30	.....	1.00	.....	0.80	.....	.....	.....
Salt Springs, Moutiers, des Salines.....	Amount of moisture not stated in analysis	97.17	0.25	.....	2.00	0.58	.....	.....	.....	.....
Salt Springs, Moutiers, Salines.	Amount of moisture not stated in analysis	93.59	0.61	.....	5.55	0.25	.....	.....	.....	.....
Salt Springs, Chateau Salin's	Amount of moisture not stated in analysis	97.82	2.12	.....	....	.....	.....	.....	.....	.....
Salt Springs, White of Sulz.	Amount of moisture not stated in analysis	96.88	3.12	.....	0.005	....	.....	.....	.....	.....
Salt Springs, Ludwigshall Middle grained	Amount of moisture not stated in analysis	99.45	.....	.....	...	.....	0.28	.....	.....	.....
Salt Springs, Kœnigsborn, Westphalia	Amount of moisture not stated in analysis	95.90	....	0.27	....	.....	1.10	.....	.....	.....
Salt, half white.....	Amount of moisture not stated in analysis	97.20	0.004	.....	....	0.05	1 12	0.07	.....	.....
Salt of, Saint Malo.....	Amount of moisture not stated in analysis	96.00	0.30	.....	....	0.45	2.35	.....	.....	.....
Common Scottish Salt	Amount of moisture not stated in analysis	93.55	2.80	.....	....	1.75	1.50	.....	.....	.....
Livington, common (Henry)	Amount of moisture not stated in analysis	93.7	1.1	.....	....	3.50	1.50	2 00	.....	.....
Livington, cat (Henry).....	Amount of moisture not stated in analysis	98.8	0.5	..	....	0.5	0.1	.....	.....	.....
Cheshire, stoved..	Amount of moisture not stated in analysis	98.25	0.075	0.02	....	.....	1.55	.....	.....	.....
Rock Salt from Wieliczka, white variety (specimen selected for its purity by Berthof.)	Dried at 212°C, moisture not stated. On being dr'd gave a little water	100.00	trace.	trace.	....	.....	.....	.....	.....	.....
Wieliczka (Hrdina) ..	Dried at 212°	97.95	0.54	.....	....	0.62	0.20	.....	0.08	0.62
Rock Salt from Berchtesgaden, fibrous variety (Berthof).....	Dried at 212°.....	99.85	0.15	trace.	....	.....	.....	.....	.....	.....
Rock Salt from Berchtesgaden, yellow variety, (Berthof).....	Dried at 212°.....	99.92	0.072	.....	....	.....	.....	.....	.....	.....

ANALYSIS OF SALT FROM EUROPE AND AMERICA.

ORIGIN OF SALT—NAME OF CHEMIST.	REMARKS	Chloride of Sodium.	Chloride of Magnesium.	Chloride of Calcium.	Sulphate of Soda.	Sulphate of Magnesia.	Sulphate of Lime.	Clay and Insoluble Matter.	Oxide of Iron	Carbonate of Lime.	Carbonate of Magnesia	Aluminate and Peroxide of Iron	Water.
Rock Salt from Hall, in the Tyroll (Bischof).	Dried at 212°.	99.43	0.12	0.25			0 20						
Rock Salt—cracking salt from Hallstadt, in Austria (Bischoff)	Dried at 212°	98.14					1.86						
Rock Salt from Schwabisch Hall (Bischof)		99.63	0.28	0.09									
Pure Rock Salt from Wilhelmsgluck, at Schwabisch Hall (Febling)		99.97					0.02					0 01	
Rock Salt from Wilhelmsgluck, at Schwabisch Hall (Fehling)		98.36			0.03		0 55			0.52	0.13	0.53	
Rock Salt from Wilhelmsgluck, at Schwabisch Hall (Fehling)		98.81		0.02			0.11			0.10	0.15	0.30	
Rock salt from Vic (Berthier)		99.30					0.50					0.20	
Rock Salt from Djehel, Melah, in Algeria (Fournet)	After deduction of 6.6 silica and 0.4 water	97.00					3 00						
Rock Salt from Ouled Kebbah, in Algeria (Fournet)	After deduction of silica and water	98.89	1.11										
Rock Salt from Ouled Kebbah, in Algeria (Fournet)		98.53	0.59	0.93									
Rock Salt from Ouled Kebbah, in Algeria (Fournet)		72.16	5.57	1.65		2.06	10.72			3 71	2.89	1.2	
Rock Salt from Holston, in Virginia (C. B. Hayden)		99.55		trace.							0.45		
Commercial Sea Salt, Venice (Schrotter & Pohl)		98.95		0.19			0.51						
Commercial Sea Salt Trepani, Sicily		98.94		0.16		0.51	0.46						
Salt deposited in the bottom of Elton Lake (Gobel)		98.79		0.13		0.35	1.04						
Sea Salt from St. Ubes, in Portugal (Berthier)		95.19				1.69	0.56						
Sea Salt from St. Ubes, in Portugal (Berthier)		89.19				6 20	0.81	0.20					
Sea Salt from St. Ubes, in Portugal (Berthier)		80.09				7.27	3.57	0.20					

It will be observed that in the vast majority of the preceding anal the salt was first dried at 212°, and the amount of moisture is not st The neglect on the part of the various chemists to state the amou moisture, of course, renders the analysis of the salt apparently some better than it would otherwise have been. Notwithstanding that the favorable conditions are on the side of the analyses of the salt from countries, quoted in the tables, it will be found upon comparison tha Louisiana rock salt is of equal purity with the best samples of rock in the world, and is far superior to the commercial salt obtained fro water and brine springs.

From the immense and inexhaustible deposits of Louisiana rock must become a most important article of commerce and exchange thr out the Mississippi Valley.

We conclude, therefore, from the preceding facts:

1. The Louisiana rock salt may be considered as essentially pure ide of sodium.

2. The Louisiana salt contains nothing injurious whatever to mea is essentially and eminently adapted to all the uses to which this va mineral is applied in the preparation of food or in the arts of agric

UNDANT SUPPLIES OF FRUIT, GAME AND FISH IN LOUISIANA.

here is not perhaps on earth, a continuous tract of land of equal ex-, presenting a greater diversity than Louisiana. Within its limits included all the varieties, from the most recent and periodically inun-d alluvium to hills approaching the magnitude of mountains; every lity of soil from the most productive to the most sterile, and from un-ded plains to dense forests.

ll the southern part of this State is an alluvial tract of low champlain ntry, extending from Lake Borgne to Sabine River, and from the Gulf lexico to Baton Rouge and Red River—about 250 miles long, and from to 140 wide. This extensive tract is intersected by numerous rivers, s, creeks and lakes, dividing this country into a great number of ds.

he lower portions of the State extending up from the 28° 55′ of N. lati-, is adapted to the orange, fig and banana, whilst in the more elevated ons, peaches, pears, apples and the vine flourish.

he lakes, bayous and marshes abound with oysters, crabs, shrimp, fish ery variety and wild ducks and water fowl.

the mammalia suitable for food, in addition to the domestic animals le, sheep, goats and swine), the forests, swamps and marshes of Lou-a afford in considerable abundance, the black bear (ursus Americanus), on (procyon lotor), otter (lutra canadensis), wild cat (lynx rufus), her (lynx discolor), fox squirrel (sciurus capistratus), grey squirrel rus Carolinensis), ground squirrel (tamias listeri), flying squirrel romys volucella), woodchuck (arctomys monax), musk rat (fiber zib-us), swamp rabbit (lepus palustris), common rabbit (lepus sylvaticus), de (cervus Virginianus), porpoise (delphinus phocœna), opossum (didel-pi Virginianus), beaver (castor fiber).

e elk (cervus stongyloceros), and the bison (bos Americanus), that erly roamed over the plains of Louisiana, have disappeared before the nce of civilization.

oviparous warm-blooded animals, fit for human consumption, Lou-a produces numerous species, some of which abound in the lakes and hes, and contribute largely to the supply of human food. It will be ient to mention the following birds of Louisiana, which are consumed od to a greater or less extent, according to their number, and accord-o the taste of the people: hen hawk (buteo borealis), chicken hawk o lineatus), bald eagle (haliætus leucocephalus), fish hawk (pandion tus), barn owl (strix Americana), hooting owl (syrnium nebulosum), d owl (bubo Virginianus), screech owl (bubo asio), king bird (musci-tyrannus), sealingwax bird (bombycillia Carolinesis). blue-bird (sia-alis), cat-bird (orpheus Carolinesis), thrush (orpheus rufus), robin us migratorius), chuck-will-window (caprimulgus Carolinesis), whip-vill (caprimulgus vociferus), night-hawk (chordeiles Virginianus), non-l (spiza ciris), indigo-bird (spiza cyanea), maybird or goldfinch (car-s tristis), red-bird (petylus cardinalis), summer red-bird (pyranga æsti-ice-bird, (dolichonyx oryzivora), cow-bird (molothru picoris), redwing -bird (agelaius phæniceus), jackdaw (quiscalus major), lark (stur-ludoviciana), blue jay (garrulus cristatus), ivory billed woodpecker s principalis), log-cock (picus pileatus), yellow-bellied woodpecker s varius), red-headed woodpecker (picus erythrocephalus), rain-crow yzus Americanus), ground dove (columba passerina), wild pigeon pistes migratorius), turtle dove (ectopistes Carolinensis,) wild turkey

(meleagris gallopavo), partridge (ortyx Virgiana), pheasant (tetrao umbellus), plover (charadrius marmoratus), killdeer (charadrias vociferus), whooping crane (grus Americana), spoonbill (Platalea Aiaia), quow (ardea nycticorax), poorjoe (ardea exilis), blue crane (ardea ludoviciana and herodias), white crane (ardea candidissima), stone curlew (totanus semipalmatus), snipe (scolopox wilsoni), woodcock (microptera Americana), curlew (numenius longirostris), fresh water marsh hen (rallus elegans), salt water marsh hen (rallus crepitans), flamingo (phœnicopterus ruber) diver (podiceps Carolinensis), ibis (tantalus loculator), white pelican (pelecanus Americanus), brown pelican (pelicanus fuscus), cormorant (plotus anhinga), black duck (anæs obscura), English or French duck, widgeon (anæs Americana), summer duck (anæs sponsa), green winged teal (anæs Carolinensis) blue winged teal (anæs discors,), canvassback duck (fuligula valisneria) wild goose (anser canadensis), shagpoke (mergus merganser).

Many other species of birds fit for food are found in Louisiana, and I have merely given examples of the different families to show the great variety of game with which the markets of New Orleans at certain seasons abound.

Of chelonians, Louisiana furnishes several varieties of great value as substantial articles of food, and even delicacies, suited to the most fastidious appetite, as follows: Gopher (testudo polyphemus). box cooter (cistuda Carolina), alligator cooter (chelonura serpentina), soft-shelled terrapin, (trionyx ferox), green turtle (chelonia mydas), loggerhead turtle (chelonia carretta), leatherbacked turtle (sphargis coriacea).

The Gulf of Mexico, the Mississippi river, the lakes and bayous, abound with fish of the greatest variety; and Louisiana produces not only the greatest abundance of delicious fish, but she has also sufficient to establish a large export trade. Amongst the important varieties of fish found in the waters of Louisiana, may be mentioned: Rockfish (labrax lineatus), grouper (serranus erythrogaster), blackfish (centropristis nigricans), trout (grys salmoides), maw-mouth (centrarchus gulosus,) perch and chub [centrarchus and pomotis], flying fish [dactylopterus volitans], yellowtail [leisotomus xanthurus], bass [corvina ocellata], whiting [umbrina alburnus], drum [pogonias chromis], young drum [pogonais fasciatus], croker [micropogon undulatus], sheephead [sargus ovis], porgee [pagrus argyrops], angle [ephippus faber],Spanish mackerel (scomber colias), spring mackerel [scomber vernalis], pompano [tranchinotus pampanus and argentus], mullet [mugil albula], salt water catfish [galeichthys marinus], fresh water catfish [pimelodus catus], plaice and flounder [plateisa oblonga], salt water eel [muræna], fresh water eel [muræna].

In conclusion, the markets of New Orleans abound with oysters, crabs, crawfish and shrimp of the finest quality and the most delicate flavor.

No city upon the habitable globe is better supplied with the most valuable products of her soil, forests and waters than New Orleans, and her resources in the matter of food and fruits are enlarged to the greatest extent by the boundless resources of the tropical islands and continential regions lying to the south.

The inhabitants of New Orleans, and Louisiana generally, have as abundant supplies of the great staples of human food, and of fruits and game and of the actual luxuries of life, as the most famed people of the globe and we can live with as much comfort and luxury in this city as in New York, London or Paris.

The remarkable health and longevity of the natives, is referable at once to the mild climate and the abundant supplies and great variety of agricultural products, fruits and game of the country.

If adulterations are practiced in articles of food, they are foreign to the people and soil, with the exception, perhaps, of milk. The extensive consumption in our day, of articles of food preserved in tin cans, is without doubt a source of danger and death from the accidental admixture of lead and other metallic salts; and the imported articles of food are no more free from adulterations than in other cities countries.

EFFECT OF OVERFLOWS UPON THE HEALTH OF THE INHABITANTS OF THE DELTA OF THE MISSISSIPPI RIVER.

OVERFLOW OF THE CITY OF NEW ORLEANS, ON THE RIGHT BANK OF THE MISSISSIPPI, BY THE WATERS OF THE LIVE OAK CREVASSE—RELATION OF OVERFLOWS TO DISEASE.

[Extract from the Report of Dr. Joseph Jones, President Board of Health, State of Louisiana, delivered at the regular meeting of the Board, June 22, 1882].

Three breaks occurred in the levee at Live Oak Grove Plantation, in the Parish of Plaquemines, twenty-five miles below New Orleans, on the right bank of the river, March 17 and 18, 1882.

This water would have, in low stages of the river and swamps, found a comparatively rapid and effectual outlet, through Barataria Bay and its several arms and bayous; but the crevasses of the Bayou Lafourche, of January 29 and March 5, had filled the chain of lakes and the bayous and swamps connected with Bayou Barataria; thus on the west, Lake Catouache, Lake Ouacha or Salvador, Little Lake, and Lake Villdiere and the surrounding swamps were filled with water, having very nearly the level of the Mississippi River; and although the water flowed continually through Barataria Bay into the Gulf, the volume rushing from above maintained the level. The high ridges of Bayous Barataria and Dupont also filled as a barrier bounding the low lands on the west, and inclosing a well marked basin between the high leveed borders or the Mississippi.

Although situated about twenty-five miles below New Orleans, the crevasse waters of Live Oak, gradually, from the causes mentioned, travelled apparently against, or rather in a contrary direction of the natural flow of current of the Mississippi River, and filled the low lands lying between the banks of the Mississippi River and those above the above mentioned bayous, and before the end of March the waters had reached the rear of the various settlements on the right bank of the river, opposite New Orleans, known as Algiers, Gretna, McDonoghville, Tunisburg, Freetown, Gouldsboro).

During the past month, the lower portion of these towns have been submerged, and but for the constitution of a levee at the rear portion of Algiers, the water would cover all portions, up to within three blocks of the Mississippi River.

This overflow has caused great inconvenience and exposure, and loss of time and money to the citizens of New Orleans, residing on the west bank, as has been rendered evident by personal inspections, the most recent of which was made in company with Hon. Ed. Booth, of the board. The question of moment for this board to consider is what effect will the overflow of New Orleans have upon the health of the citizens upon the west bank.

This question takes a wider range, and should embrace the effects upon the health and the lives of the people, of overflows generally. During the

remarkable flood of 1882, a large portion of the richest and most highly cultivated and thickly populated lands of Louisiana have been overflowed by the crevasses of Airlie or Alsatia, Hawarra, Raleigh and Pecan Grove, of East Carroll; Noland-Omega, Backbone, Morancy, Upper Delta and Bayou Vidal, Madison Parish; Ion and Woodbourn, Buckner's, Point Pleasant, Buck Ridge, Ship's Bayou, Upper Hardtimes, Lower Hardtimes, Ford-Field, Hardscrable, Bondurant, Kempe and Waterproof, Tensas Parish; Lake Concordia, Fish Pond Bayou, head of Atchafalaya, Merrick, Hagan, Torras, Smithland, Old River, Raccourci, Pointe Coupée, Pointe Coupée Parish; Arizona, Iberville Parish; Landry, Ascension Parish Story, Poydras, St. Bernard Parish; Like Oak Grove, Dobard, Guesnard, St. Sophie, Monsecour, Point-a la-Hache, O'Brien, Plaquemines Parish, and numerous others in Avoyelles, St. Landry and Lafourche parishes.

In considering in a sanitary and hygienic point of view, the effects of this vast inundation of the Delta of the Mississippi River, the inquiry should commence with a consideration of:

1. The chemical constitution of the waters of the Mississippi River.

2. The physical and chemical properties and physiological relations of the sediment deposited from the waters of the Mississippi upon the submerged surfaces.

1. *Chemical Constitution of the Waters of the Mississippi River,*

I have made the following examinations of the waters of the Mississippi River:

(a). Mississippi River water from the inlet pipe.

When first drawn the water presented a turbid appearance; upon standing the suspended matters settled, forming a light grayish yellow deposit and the supernatant water remained slighty turbid from a small remaining portion of suspended matters.

The insoluble suspended matters amounted to twenty-three and two tenths (23.2) grains to the gallon of water, and under the microscope were found to consist chiefly of very finely divided sand (Silicic acid) and the silicates of alumina and contained but few specimens of animalcules or vegetable structures.

After the removal of the suspended matters the water yielded a specific gravity similar to that of distilled water, and the amount of saline matter was found to be only eleven and nine-tenths (11.9) grains per gallon. Upon analysis it was found that those saline matters contained only traces of the sulphate of potassa, soda and magnesia, and consisted almost entirely of the carbonates of lime and chloride of sodium.

Each gallon contained 2.91 grains of lime (equivalent to 5.29 grains of carbonate of lime) and 3.378 grains of chlorine (equivalent to 5.53 grains of chloride of sodium, common salt).

One gallon (70,000 grains) of Mississippi water contained:

Specific gravity at 60° F	1000
Suspended matter deposited on standing	2
Fixed saline constituents	1
Carbonate of lime	
Chloride of sodium	
Carbonates and sulphates of soda, potassa and magnesia	

From the results of the preceding analysis, and from those of many others which I have made, we conclude that the waters of the Mississippi when freed from the suspended matters, are of great purity, and will compare favorable with the drinking water supplied to the largest and

gulated cities in the world, and the truth of this assertion has been es-blished by a critical comparison with the analysis of the various springs d rivers used for the supply of cities in America and Europe.

If the solid saline residue of one hundred thousand parts of the Missis-ppi River water be compared with the solid saline matters of the drink-g waters of the noted springs and rivers of this and other countries, it ll compare favorable with each, and is in fact far purer than the majority drinking waters heretofore analyzed by chemists.

In each glass of Mississippi River water, less than half a grain of saline nstituents are present, and this small amount, absolutely inappreciable its affects upon the animal system, is composed almost entirely of com-n salt, and carbonate of lime. If these salts exert any effect upon the mal economy, it is beneficial, and not injurious. Thus, the lime salts are arly related to the developement of the osseous and dental systems.

We conclude, therefore, that the mere presence of the Mississippi waters n the overflowed lands will not necessarily cause sickness from any de-rious property or substance inherent in them.

The physical and Chemical Properties and Physiological Relations of the iment Deposited from the Waters of the Mississippi upon the Subnerged face.

point of considerable interest in a sanitary view, as established by the ceding and numerous other examinations, is that the suspended tters of the Mississippi River waters are, to a large degree, free from anic impurities, and consist almost entirely of finely divided silicic acid silicates, The suspended matters, so far from rendering the waters of Mississippi unfit for sanitary purposes, add to their disinfectant pro-ies.

is well known that clay, resembling in its general properties the sedi-t of the Mississippi River, is disinfectant in its properties, and sur-ns have long known that dried clay pulverized forms an admirable lication and dressing to compound comminuted fractures and gunshot nds.

UNT OF THE SEDIMENT CONTAINED IN THE WATERS OF THE MIS-SISSIPPI RIVER.

ne amount of the sediment deposited from fixed quantities of the Mis-ppi River waters varies with the nature and extent of and sources of verflows, but still certain results of a general and valuable character e been obtained from the careful collection and determination of the ntity of the sediment.

r. Meade and Mr. Lidell, assistants of Captain Talcott in his survey of nouths of the Mississippi in 1838, measured the amount of sedimentary er contained in the water. The former, from observations made in il and May, considers the quantity to be 1-1250th part by weight. The r adopts 1-1724th for the ratio.

ofessor Riddell's first experiments upon the amount of sediment con d in Mississippi water were reported in a letter addressed to Sir les Lyell on March 5, 1846, and gave a ratio of dry sedimentary mat-o the weight of water and sediment of nearly one to 1245, and by ne of one to 3000. In his second series of experiments, in 1846 nding from May 21 to August 31, 1846,) Professor Riddell estimated atio by weight of the sediment to the water as 1 to 1158.3.

e observations of Mr. Brown, at Natchez, July 1, 1846, June 30, 1848, of Lieutenant Marr, at Memphis, in 1849, placed the relative amount diment at a much higher figure.

Professor Forshey, in 1851, in his experiment at Carrollton, established that the Mississippi water is not charged to its maximum capacity with sediment, and that the amount of sediment varied during the different periods of the year within wide limits; the maximum amount being 1-681, and the minimum 1-6383, mean 1-1808 by weight.

A comparison of the general results led Captain A. A Humphreys and Lieutenant H. L. Abbot to the belief that no material error will result from assuming that the sediment of the Mississippi is to the water, by weight, nearly as 1 to 1500, and by volume nearly as 1 to 2900, provided long periods of time be considered.

If this be so, and if the mean annual discharge of the Mississippi proper be correctly assumed at 19.500,000,000,000 cubic feet, it follows that 812,500,000,000 pounds of sedimentary matter, constituting one square mile of deposit, 241 feet in depth, are yearly transported in a state of suspension to the Gulf; or, adding to the mean annual discharge of the Mississippi at Carrollton the mean annual discharge of the three outlet bayous, we have for the total discharge from the basin 21,300,000,000,000 cubic feet, containing 887,500,000,000 pounds of earth matter, which is yearly deposited upon the delta proper.

When the Mississippi swamp lands are securely protected against overflows, the earthy matter which in their usual condition was annually deposited upon them, was carried to the Gulf.

The discharge into any one of the great swamps during the mean annual flood, may be taken as 100,000 cubic feet per second, during a period of one month and a half for the St. Francis, Yazoo and Tensas, and three months for the Atchafalaya bottom, or delta proper. Taking into consideration the fact, that during the great flood year the breaks in the levees have been so numerous and so large, that the volume of water discharged through them has been nearly equaled to the volume discharged over the banks in their natural condition, we have for the additional amount of sedimentary matter that will be carried to the Gulf, 81,000,000,000 pounds, or about one-tenth of that transported to it before the construction of levees.

The vast mass of sediment is spread over the overflowed districts, and leaves a brownish red deposit upon the surface of the earth, which whils improving the fertility of the soil, at the same time in virtue of its fine division, its chemical constitution, and the absence of organic matter, capable of undergoing fermentation and change, exerts no deleterious effect upon the health of the inhabitants.

It is possible, however, for overflows to occasion the prevalence of marial and even of malignant fevers, from causes not necessarily dependen either upon the chemical composition of the water, or of the sediment hel in suspension.

NOTES ON EARLY INVESTIGATIONS ON THE SEDIMENT OF THE MISSISSIPI RIVER.

At the meeting of "The American Association for the Advancement of Science," he at Philadelphia, September, 1848, Dr. Dickeson read an extended report on "The Sediment of the Mississippi River," prepared by Andrew Brown, Esq., and Dr. M. W. Dickeson, from which we extract the following results:

The committee composed of Andrew Brown, Esq., and Dr. M. W. Dickeson, charg with the duty of collecting and reporting to the association as many of the facts a characteristics respecting the condition and annual conduct of the Mississippi River, might be practicable, submitted a series of facts and observations in connection the with, collected by virtue of the most favorable opportunities of daily observation the last eighteen years, and continued without intermission with a view to this repo for the last two years of that term, beginning the first of July, 1846, and ending thirtie of June, 1846, comprising a series of notations and calculations of the quantity of wat

the several stages of elevation and depression, during the river's annual oscillations, tween its mean high water and low water lines, together with the quantity of detrital sedimentary matter matter with which it is charged.

The committee found the aggregate annual quantity of water discharged by the Mississippi to be 14,882,360,639,880 cubic feet, or 551,235,579,143 cubic yards, equal to 101.1 bic miles.

As the Mississippi River is the only visible outlet for the surplus water of the vast lley, through which it passes on its way to the ocean, and as the Mississippi Valley s been found to contain an area very little, if any, short of fourteen hundred thousand nare miles, it is important to determine the relative difference between the quantity of n water falling annually in this valley, and that discharged by the river.

The committee found by examination of the meteorological register of the late Dr. H. bley, of Natchez, that the mean quantity of rain water, which falls annually at Nat z, is between fifty-five and fifty-six inches; but, as such is the quantity for the uthern extremity of the valley, it may be regarded as over estimating, if taken for an rage of the whole area, the mean quantity was, therefore, assumed to be fifty-two hes; upon which basis it was calculated that the entire rainfall of the whole valley s 169,128,960.060,000 cubic feet, which is almost 11.36 times the quantity which is charged by the river.

There can be but two ways by which this immense quantity of water can make its ape from the valley; one is by the course of the river, and the other by evaporation. ice there is but one relative portion of this quantity passing off by the river, for every parts which are exhaled into the atmosphere; or 8-91 parts are carried off by the er, and 83-91 parts by evaporation.

The result established an important fact to the planting interest (agriculturists) of isiana and Mississippi; for it will be perceived that the more exhalations are promot- the less liable will the low or bottom lands of these two States be to the periodical ndations of the river. The best method of promoting the evaporating process, name- the clearing of large portions of the valley of its forests for the promotion of agricul- , and the consequent exposure of the lands to the action of the sun and winds, has in rapid and successful progress.

The committee affirm: "So rapid is the progress of this increased exposure, and its sequent evaporating tendency, and so visible have been its effects on the Mississippi er, that we may hazard the assertion with safety that there is not now by twenty or nty-five per cent as much water passing down the Mississippi as there was twenty- years ago, for at and prior to that time, there were annual inundations of many and long periods of submergence of almost all the bottom lands, from the bluffs or lands on one side of the river bottom to those on the other side. Such lands were at period in a great measure counted valueless; and to such a degree that but little o hopes were entertained of the practicability of their redemption by any artificial ns, that is on any general scale; but such has been the diminution in the annual tity of water discharged from the valley, that these lands have been progressively rapidly redeemed from overflow, until very great portions of them are now in the highest state of cultivation, and with but comparatively slight assistance from art e way of embankments, and then such as could not have been at all available st the overwhelming effects of floods, and the length of time of their continuance; hen there were annual inundations, both deep and expansive, of the waters, over st all the bottom lands; but now the river seldom rises to the same elevation as erly, and when it does, it is of much shorter duration, and the waters are almost sively confined to the channel of the river, in place of being spread over almost all ottom lands the whole spring and early part of the summer."

m the same cause the quantity of floating timber and drift wood passing annually n the river has diminished in a far greater ratio than that of the water, and the egate quantity cannot now be even fifty per cent of that which formerly passed .

will not be difficult to perceive the yearly difference there must necessarily be in vaporation from a surface of country exposed to such action, and that which is ed by the primitive forests and their almost impervious undergrowth, through h neither sun nor wind can penetrate but with difficulty.

ith reference to the amount of suspended matters (sediment) contained in the Mis- pi River, we found that there was deposited from a column of water 19.36 feet, a n of sediment or solid matters of 46¼ inches. But as this sediment still seemed to e some slight disposition to further settlement or contraction, the committee as- d forty-four inches to represent the solid sediment from a column of river water of 2 inches; the mean proportion or quantity of sediment to the whole volume of water being, according to these data, as 1 ts 528. As according to the determina- f Mr. Brown and Dr. Dickeson, the quantity of water annually discharged by the ssippi River was 14,883,360,636,880 cubic feet, then must there be deposited from quantity of water 28,188,053,893,1-6 cubic feet of solid matter. In this calculation

no account is taken of the coarse sand and gravel, transported by the river current, which forms numerous shifting bars, subject to perpetual change of position, and consequent tendency of the matter to the river mouth.

If, in common with Sir Charles Lyell, the delta of the Mississippi be regarded as comprehending all that great alluvial plain which lies below or to the south of what, until recently, was the first branching off or highest arm of the river, called Atchafalaya, its superficial area may be computed at 13,600 square miles. If, in deciding the depth of the deposit laid down in the delta by the Mississippi, we assume the calculation of Professor Riddell and say that it is of an average depth of one-fifth of a mile, or 1056 feet, which he infers from that being the average depth of the Gulf of Mexico, from the Balize to the point of Florida, by computation from the above data, it would require not less than 400,378,429,440,000 cubic feet, or 2720 cubic miles of solid matter to constitute this "delta." Having ascertained the quanttty of solid matter annually brought down to the Mississippi River, to be 28,188,083,892 cubic feet, which would be equal to one square mile of the depth of 1056 feet in 381 1-5 days, or one cubic mile in five years, eighty-one days, it therefore follows that it would require a series of 14,203 4-5 years for the river to effect the final formation of the present "delta."

"We are not disposed to consider the great alluvial plain, stretching with the river, from the above designated delta, as far up as Cape Girardeau, in Missouri, or any part of the delta proper, nor can it ever have been any continuation of the Gulf of Mexico, or arm of the oeean, as is usually supposed; the evidences are vastly against any such conclusions, inasmuch as to the diluvium which constitutes the highlands bordering on each side of this alluvial plain by its general distribution, would have been equally deposited in such gulf or arm of the sea, which, in reality, could not have been the case, for the river has excavated through this diluvium, and exposed it in many places, resting on what is evidently of another formation; and such is not only found to be the case at the base of the diluvial hills, but the same formation is found also to constitute the bed of the river at many other points, detatched for very considerable distances from any high lands. On reference to the reported diagram, right hand side, will be perceived that the position of the formation and base of the diluvial bluffs, which are in depth, to high water line, at this point, 179½ feet; and it will be seen that they extend almost as low as the bottom of the river, making their whole depth about 220 feet."

"There have been no excavations or perforations through the alluvial matter in any parts of this vast plain, excepting those which have been affected by the river itself; but it would seem that it does not exceed, in any part, the depth of the river, whose high water line may be regarded as the average level of the plain, and from that to the bottom of the river is about 117 feet. This bed of the river is of entirely different character from the composition of any part of the diluvial bluffs.

"In building a breakwater, your committee had occasion to quarry much of this substance, and found it to possess all the characteristics of a well formed rock, which has to be acted on by wedges, crowbars and pickaxes to effet its reduction, but on exposure to the weather it gradually pulverizes and becomes an adhesive blackish clay, but very different from the tenacious clay of the alluvium or diluvium.

"From the above observations, should they truly represent the character of the plain the inference is irresistable, that the Mississippi river has excavated the whole of the valley, and denuded the upper tertiary of all its incumbent diluvium, from the high lands on one side to those on the other, of which every indication is confirmatory; and there are evident traces of the river having occupied every part of the bottom, for its ancient beds are found at intervals in the form of lakes and depressions throughout the whole extent of it.

"The superficial area of this great valley has been found to be about 16,000 square miles, bounded by high lands on either side, ranging from fifty to 350 feet above the level of the plain. Should this space, therefore, have been reduced or excavated by the river, as we assume, it must have transported the diluvial matter, and caused it to form part or portion of its delta. Now assuming the average height of the high land above the plains to be 150 feet, we will therefore obtain 454½ cubic miles, or 66,908,160,000,000 cubic feet of matter, as its proportional contribution, for the formation of the delta, the balance required being 333,451,269,440,000 cubic feet. to be derived from the reduction of other lands, the two sources being to each other as 1 to 5.98; or, by giving another expression to the same quantities, there is, in the delta, 2720 cubic miles of matter; 454½ of which would be derived from the diluvium on the excavation of this valley; the other portion would consist of 2265½ cubic miles to be derived from other sources or the reduction of other lands.

"We have now traced this great river through a period of 14.204 years, but how it was occupied before that time, or what was the condition of the country over which its waters passed, is more than we can safely venture to say; but on particular examination of the bluffs, or cliffs, which bound its present plain, it will be very difficult to resist conviction, that the river has had great agency in depositing the upper or loamy stratum which varies from a few feet to upwards of fifty feet in thickness, and in all of which

ratum there is abundance of land and fluvatile shells, such as those now found in the posit from the river. On receding from the river bluffs, we find that the clay, or other uvial matter, which underlies the loam-bed on the top of the bluffs, crops out, very arly indicating an ancient valley, or depression in the diluvium, which constituted more primitive bed of the river, on whose sloping flanks, and more particularly, in ir depressions, this fluvatile matter or ancient alluvium, was deposited.

'Any variation of its character, from that which is now deposited, may be very readi- accounted for by the varying conditions of the ground over which the waters have i to pass, for it may safely be inferred that they then had to make their way over the e of a country being different in character from the present; for they have gone on, gressing, to abrade the high lands of their lighter matter, and to cut deep channels the valleys down through the more primitive rocks, whose detrital matter must neces- ily assume a somewhat different character from that which it formerly had, particu- ly that on the top of the bluffs. We have found the age of that deposit to be not less n 14,204 years, through all of which time the waters have been actively engaged in nging the face of the country, and transporting 2720 cubic miles of its matter to a distant location. * * *

Having early perceived that this report would exhibit a series of results varying very ch from that obtained by Proffessor Riddell on the same subject, and reported to this ociation in 1846, we have on that account been the more careful that accuracy should end all our proceedings with reference to it.

By this report, the mean annual discharge of water in the Mississippi is 14,883,360,- 880 cubic feet; the Riddell report gives 11,108,275,000,000 cubic feet. The difference be accounted for by the greater uncertainty there must be in obtaining any correct n where conditions and velocities are so changeable; at least, there cannot certainly he same dependence placed in quantities got by such a method as there may be in t more mathematical one adopted by this report. But the difference in the two esti- es, with respect to the solid matter held in suspension by the waters, may well seem most extraordinary that can be conceived in any two estimates for the same thing. s report gives to the solid matter, in bulk, as compared with the bulk of water, as 1 28; the Riddell report gives it as 1 to 3000. Why there should be anything like this rence may seem difficult to determine, and is well calculated to abate the confidence hich either report may be entitled.

Agreeable to the Riddell report, it would require a column of water 250 feet in height eposit one inch of sediment. Were that so, it would have required that our tin tube ld have been filled 1750 times in order to have produced the quantity of sediment with submitted; in which case we would have contented ourselves with obtaining ch smaller quantity. According to this report, there is one inch of solid matter sited from a column of water of forty-four feet. Every one who has traveled on the issippi, and seen the turbid condition of its waters, will be able to decide between e two reported quantities.

We will here remark, so as to account for the discrepancy, that if the waters of this are not continually agitated by the force and turbulence of the current, the sus- ed sediment very soon subsides considerable below the surface; and at or opposite Mint, in New Orleans, is below almost all the wharves, and most of the shipping. n the waters are very still, and when deposition takes place to a very great extent, to make much land, after the water has so parted with a portion of its sediment, it s down past the Mint without being but slightly agitated, the principal current g altogether on the other side of the river, and but very little on that side when ssor Riddell procured the test water for his experiments, according to his own state- . * * *

n a large excavation made for the gasworks, at New Orleans, eighteen feet deep, were found imbedded innumerable stumps of trees, buried at various levels, in an position, with their roots attached, implying the former existence there of fresh r swamps, covered with trees, over which the sediment of the Mississippi River had spread during inundations. The site of the excavation is only nine feet above the of the sea; therefore, the lowest of the embedded stumps must be nine feet below level. Now, this must not be at all surprising, when we reflect that the first growth ees in this region must have taken root on the surface of new-made ground. de- ed from the Mississippi, and that ground, or deposit, of the depth of 1050 feet, with tinual tendency to settle into a more compact condition by incumbent pressure, cular affinity and arrangement of particles, as we found it to be the case with the ing of our sediment. Every year's sinking down, in this case, would be fully com- ated by every year's deposit, for the lower it at any time sunk the longer it would bject to inundation by the subsequent overflows, so that the sinking and compen- y process would go on together, and continue about equal, which will account for ircumstances of former forests being now found so far below the level of the sea. hould this subsidiary process be now, in any measure, incomplete in that region e the city of New Orleans now stands, and which we indeed very much question, in

that case, the compensatory equivalent being cut off by embankments, or the levying out of the waters, the time may, possibility, yet come, when the ground on which the city of New Orleans now stands, may sink to a level with the ocean, or even below it; at least, should there be any further settlement at all, it must, in the same rate approximate that level, for the final adjustment of particles in a deposit of 1056 feet deep, that may preclude any further settling, may be expected to take an immensity of time."

"ANDREW BROWN,
"M. W. DICKESON, Committee."

TABLE OF THE CALCULATIONS MADE IN THE FOREGOING REPORT.

1. Quantity of water discharged by the Mississippi River, annually, 14,883,360,636,880 cubic feet.
2. Quantity of sediment discharged by the Mississippi River, annually, 28,188,083,892 cubic feet.
3. Area of the delta of the Mississippi, according to Mr. Lyell, 13,600 square miles.
4. Depth of the delta, according to Professor Riddell, 1056 feet.
5. The delta, therefore, according to 3 and 4 contains 400,378,429,440,000 cubic feet, or 2720 cubic miles.
6. According to 2, it would require for the formation of one cubic mile of delta, 5 years and 81 days.
7. For the formation of one square mile of the depth of 1056 feet, 1 year, 16 1-5 days.
8. For the formation of the delta, according to 2, 3, 4, 14,203, 4-5 years.
9. The valley of the Mississippi, from Cape Girardeau to the delta, is estimated to contain 66,000 square miles, 150 feet deep; it, therefore contains 66,908,160,000,000 cubic feet or 454½ cubic miles.—*Proceedings of the American Association for the Advancement of Science, May* 1848, *pp.* 42-55.

SEDIMENT OF THE MISSISSIPPI RIVER.

At a meeting of the American Association for the Advancement of Science in 1847, a committee was appointed to report as to the practicability of reclaiming the drowned lands of the Mississippi Valley, and also as to the probable effect which the reclaiming these lands would have on the navigation of the river. As those subjects were of vast national importance, Lieutenant Maury addressed a letter to Hon. J. Y. Mason, Secretary of the Navy, Washington, dated National Observatory, Washington, December 27, 1847, with a view of aiding the committee in its investigations. and requesting that the officers of the Memphis Navy Yard, be directed to conduct a series of observations, with a view to obtain answers to the following questions:

1. What is the average quantity of water taken up at Memphis by evaporation?
2. What is the average volume of river water that daily passes by that place?
3. What is the quantity of silt contained in the water?
4. What is the daily rise and fall of the river?
5. What, at the different stages of the river, is the rate of the current at the surface and successively at the depth of every ten feet?
6. What the daily temperature of the water at the surface, and what the bottom in the main channel-way?
7. And if not already the subject of observation, what is the quantity of rain that falls there?

The Hon. J. Y. Mason, Secretary of the Navy, Washington, promptly complied with the request of Lieutenant Maury, and the report of Robert A. Marr, Esq., of the United States Navy, was submitted to the American Association for the Advancement of Science at their second meeting, held at Cambridge, August, 1849.—*Proceedings of Association the Advancement of Science, second meeting; held at Cambridge, August,* 1848, *pp.* 334-435.

From the report of observations made at the Navy Yard at Memphis during the months of April, May, June and a part of July, 1849, by Robert A. Marr, United States Navy, we extract the following:

Evaporation—The average quantity of water evaporated was 13-100ths of an inch daily.

Rain—The average quantity of rain falling was 11-100ths of an inch daily. The weather was thought to be unusually wet.

Quantity of Water passing Memphis—The average quantity of water passing during the observation was daily 57,165,356,160 cubic feet. "The river for the last few months has been unusually high, but considering this quantity as an average, the water passing in one year would amount to 20,865.354,998,400 cubic feet, a quantity sufficient to cover an area of 100,000 square miles to the depth of 7¼ feet."

Currents—Mr. Robert Marr found the velocity of the current near the bottom to that of the surface as 268 to 300. I believe that very near the bottom it is much less. It appears that the greatest velocity of current obtains when the river is rising most rapidly, and that the rapidity of the current at high water is to that at its lowest stage during the time of these observations. about 33 to 28.

It is impossible to observe the current of this river, and notice its effects upon the banks, without being strongly impressed with the vital importance which the serpentine course of this river (at which travelers so inconsiderately complain) is to its navigability. The winding course of this river, by diminishing the ratio of its fall to its length, greatly lessens the velocity of current; but the greatest restraint upon the fury of this current arises from the abrupt turns in the channel, which, by forcing the stream from a right course, constitutes a series of checks, without which this river would wash in with such impetuous violence as to render its navigation utterly impracticable.

Temperature of the Water at the Bottom of the River.—"I have found the temperature of the water at the bottom of the river to be the same as that at the surface; at least, the difference is not observable with the ordinary thermometer. * * * This equality of temperature is attributed to two causes: One is, that the sun does not in so short a time affect the water *immediately* beneath the surface to a degree observable with the common thermometer. This latter fact is evident, because whenever I have tried the experiment, I have found the river water as warm at midnight as at noon. Another cause may be that the bottom and surface water, owing to the greater agitation of the current, frequently change positions. The water is generally affected by the temperature of the air, but the effect is very gradual.

"The fact that the temperature of this river is so little affected by the casual and local variations of temperature of the atmosphere, suggests the idea that it may be regarded as the mean result of innumerable observations, taken in every portion of the country through which the river flows; and that if the temperature of all the large rivers and other large bodies of water should be carefully noted and combined, the result would indicate the average temperature of the whole country. If such observations were continued for years, they would show whether the spring of any particular year was backward or in advance.

"*Velocity of Current as Influenced by Stage of Water.*—The lowest stage of the river, since these observations were commenced, has been 20.2 feet above low water. At that point the average velocity of the central surface current was 2¾ miles per hour; at the height of 33.6 feet it was 3¾. When the river is at 33.6 feet above low water, there is about one-half more water in the river than when at 20.2 feet. Now, I think it may be safely assumed that if all the overflow was confined to the river, the height of the river could not be increased more than fifteen feet, and this increase (reasoning from the above data), would not give a greater velocity of current than five miles.

"*Silt.*—The quantity of silt has been ascertained by daily placing a known quantity of river water in a box, drawing off the water as it becomes clear, and weighing (when dried) the earth thus deposited. The average quantity of earth contained in one hundred cubic feet of river water is twelve and seven-tenths pounds, which gives 26,580,008 pounds, or 2,137,061,974 cubic feet of earth passing in one year—a quantity sufficient to make a bed of earth one mile square and seventy-six feet deep.

"(Signed) ROBERT A. MARR,
"Acting Master, U. S. N."

PREVIOUS TO THE ERECTION OF LEVEES, THE DELTA OF THE MISSISSIPPI WAS ANNUALLY OVERFLOWED.

The city of New Orleans was laid out in 1717, by Engineer Dumont de Tour, on the left bank and in the concave bend of the Mississippi river, which approaches nearest to the Lake Ponchartrain, about five miles distant. The flood line of the river at that time was determined to be about three feet above the natural river bend, and de la Tour ordered a levee to be constructed for the protection of the future city, four feet high, eight feet wide at top, and 5,400 feet long. In the rear on the present line of Rampart street, a levee six feet high was ordered, at the ends above and below, levees gradually increasing from four to six feet. These levees were constituted lines of fortification as well, and were provided with stockades and ditches, bastions at the rear angles, and forts in front. They were not completed till 1726, and they were the first levees constructed in the valley of the Mississippi.

The place d'Armes, now known as Jackson Square, and the Cathedral and public buildings were located opposite the middle of the river front. No perceptible change has occurred in the position of the river bank opposite the lower side of the public square, either by accretion or caving since

1717. Above, an extensive batture has been formed, below there has been very little if any change for some distance. On the opposite or right bank of the river, a little further down, where the Bellville foundry now stands, the river bank has also remained stationary since 1717.

Before the era of levees, the points opposed to the river were kept, by deposits, nearly up to the highest flood line, while the bends, or natural banks around the bends, were generally from two to three feet or more below the flood line. Consequently, as the water flowed out over the banks in the bends, outlet channels existed in every bend.

Soon after the settlement of New Orleans, plantations were established along the river bank above and below the city. Every proprietor had to construct and maintain his own levee, but as the river deposits had kept the natural banks nearly up to the flood line, small levees answered the purpose.

In 1723, there were small settlements in Ponte Coupée at Baton Rouge, near Bayou Manchac, below Bayou Lafourche, at Cannes Brulées, and at Tchoupitoulas. In 1728 the settlements extended for thirty miles above New Orleans, almost continuously. In 1735 the levees extended from English bend twelve miles below, to thirty miles above, and on both sides of the river. In 1742, an ordinance was promulgated requiring the inhabitants to complete the levees by January 1, 1744, under penalty of forfeiture of their lands to the crown. In 1752, the settlements were nearly continuous for thirty miles below and thirty miles above New Orleans, and nearly the whole coast was in a high state of cultivation and securely protected from floods. In 1763, France ceded Louisiana to Spain and the policy of the latter government was not such as to foster the growth of the Colony, and but little progress was made in levee construction until after the cession of Louisiana to the United States in 1803, by France; it having been ceded back to France by Spain in 1800.

In 1812 when Louisiana was admitted into the Federal Union, levees extended from the lowest settlements at Pointe Coupée on one side, and to the neighborhood of Baton Rouge on the other, except where the country remained unoccupied.

In 1828 the levees were continuous from New Orleans nearly to Red River Landing, excepting above Baton Rouge, on the left bank, where the bluffs rendered them unnecessary. In 1844 the levees had been made nearly continuous from New Orleans to Napoleon, Arkansas, on the right bank, and many isolated levees existed along the lower part of the Yazoo front. Above Napoleon few or none had been attempted. Between the year 1856 and 1860, the levees of the right bank, from Cape Girardeau down to the mouth of the Arkansas River, were built piecemeal, but finally were nearly continuous, leaving intervals of less than forty miles, in the aggregate, when the war of 1862 ended all improvements.

The process of levee construction began at New Orleans in about the year 1720, and it progressed gradually downwards for about seventy miles and upwards nearly one thousand miles during one hundred and fifty years.

FLOODS OF THE MISSISSIPPI.

In 1718, the year after the selection of the site of the city of New Orleans, there was an extraordinary rise of the Mississippi, which greatly discouraged the new settlers. A great flood occurred in 1735, which inundated the city. The flood of 1735 was continuous for an unusual length of time, from late in December to late in June, and the succeeding l

water was remarkably low, giving a range from high to low water at New Orleans of fifteen feet, or about the same as to the highest flood lines of recent years, as in 1862, which was fourteen feet eight inches. The records of the flood years from 1735 to 1770 are wanting, but in the latter year a great flood occurred, with its usual inundations. In 1782 there was a flood which it was said exceeded any remembered by the oldest inhabitants. Great floods occurred in 1785, 1796 and 1799, and during each of these years New Orleans was inundated.

The years 1869, 1811, 1813, 1815, 1816, 1823, 1824, 1828, 1840, 1849, 1850, 1851, 1858 and 1859 were marked as flood years. In 1865, 1867, 1874 and 1882 extensive inundations occurred.

In 1862 the flood-line was everywhere below Cairo remarkably high, but although several crevasses occurred below Red River, their capacity was insufficient to cause any general inundation of the valley west of the Mississippi, and south of Red River.

The noted overflow of 1816 commenced on the sixth of May, and subsided in twenty-five days. The suburbs and rear portions of the city were submerged from three to five feet. One could travel in a skiff from the corner of Chartres and Canal streets to Dauphine, down Dauphine to Bienville, down Bienville to Burgundy, thus to St. Louis streeet, and from St. Louis to Rampart and throughout the rear suburbs. No increase of disease was referred to that overflow.

In 1831 the waters of an inundation reached the line of Dauphine street —the fifth from the river front—the result of a violent storm in Lake Pontchartrain. A similar event occurred in 1837. In 1844 a storm backed the Lake waters up to Burgundy street, sixth from the river front, and the same disaster happened again in 1846. The overflow of 1849, following the Sauvé crevasse, of the third of May, has been regarded as the most serious overflow with which New Orleans has ever suffered.

The water reached its highest stage on the thirtieth of May. The line of the flood ran along Bacchus (Baronne) street, sometimes reached to Carondelet, from the upper limits of Lafayette to Canal street, covered that street, between Carondelet and St. Charles street, and thence to the Old Basin. About 220 inhabited squares were flooded, more than 2000 tenements surrounded by water, etc., a population of 12,000 souls either driven from their homes or leading a life of privation and suffering.

The last inundation of the city, on the east bank, was in 1881.

RELATIONS OF OVERFLOWS TO DISEASE AND DEATHS.

We have but scanty and imperfect data concerning the floods and their effects upon the health of the inhabitants of Louisiana during the eighteenth century, when the province was under the French and Spanish crowns, and the inquiry is necessarily limited to the nineteenth century.

In estimating the effects of overflows upon the health of the people, it would be manifestly more accurate to consider the mortality not merely of the year in which the flood occurred, but of the succeeding year.

No data, with the exception of that furnished by the United States census at interims of ten years, exists with reference to the mortality in the various parishes of this State; and hence it is impossible to estimate the effects of overflows upon the health of the inhabtants of Louisiana. In 1813, when the city was inundated by a crevasse in the levee of Kenner's plantation, about two miles above Carrollton, the death rate per 1000 inhabitants was 46.45, and in the following year, 1814, 43.39.

In 1816, when a large portion of the city of New Orleans was inundated for twenty-five days, during May and June, the mortality was remarkably small, reaching only 27.93 per 1000 inhabitants; but in the following year, 1817, yellow fever invaded the city, and the mortality rose to 73.27 per 1000 inhabitants.

In 1831, when a large portion of the city was again inundated, the mortality was 36.71, and in 1832, when the city was desolated by cholera and yellow fever, the death rate rose to the extraordinary rate of 147.01 per 1000 inhabitants.

1837, death-rate per 1000 inhabitants, 70.45; yellow fever destroyed 1300 citizens; 1838, death-rate, 36.77; 1844, death-rate, 53,33; 1845, death-rate, 31.17; 1846, death-rate, 41.34; 1847, death-rate, 83.19; 1849, death-rate, 80.48; 1850, death-rate, 60.26; 1867, death-rate, 55.67; 1868, death-rate, 28.96; 1874, death-rate, 35.71; 1875, death-rate, 32.05.

The mortality of 1881 does not appear to have been materially influenced by the overflow of the lower portions of the city by the lake waters, the death-rate being 29.64 per 1000 inhabitants; it is worthy of note, however, that the mortality of 1881 exceed that of 1880 by 783; that of 1879 by 1284, whilst it was 302 less than that of 1877.

From the preceding facts, the following conclusions may be drawn:

1. No connection has been established between overflows and epidemics of yellow fever or Asiatic cholera.

2. In the history of New Orleans inundations have often been accompanied by, and followed by a high death-rate, whilst on the other hand, years may be selected in which no appreciable effect upon the rate of mortality has been observed.

PROBABLE EFFECT OF THE OVERFLOW OF 1882 UPON THE HEALTH OF THE CITIZENS OF NEW ORLEANS ON THE RIGHT BANK OF THE RIVER.

This question is of serious importance to near 10,000 citizens inhabiting the Fifth District and the Parish of Jefferson. According to the census of 1880, the fifteenth ward alone contained 8856 inhabitants, and this does not embrace the entire series of settlements immediately in front of the ancient city of New Orleans. The population of the righ bank has also augmented rapidly during the past two years, on account of the increase of manufacturing, marine and railroad enterprises and the increased facilities afforded to shippers.

The people are now confronted with a large mass of stagnant water, which in the lower portions of the chains of town, known as Algiers, Freetown (Gouldsborro), McDonoghville, Tunisburg and Gretna, has invaded their yards, and even their houses.

Under the burning rays of the sun, the water which we have shown, by chemical analysis, is *per se* and in the fresh state pure and innocuous, now receives the drainage and a considerable portion of the offal of the habitations of ten thousand people.

The lower forms of vegetable and animal life, fungi, aquatic plants of various genera and species, animalculæ, frogs, serpents and fish, are multiplying with great rapidity. Upon personal inspection I was informed that it was by no means uncommon to find reptiles of various kinds, as water mocassins, water-snakes and even rattle-snakes, under the houses and in the gardens. The nights are rendered hideous by the croaking of the frogs. Were it possible to maintain this mass of animal and vegtable life in a state of healthy activity, and to keep up continuous supplies of fres

water, the damages from the overflow to health and life would be diminished. It is evident, however, that if this water should subside during the hot months of June, July, August, September and October, the 10,000 citizens residing on the right bank of the Mississippi will be subjected to a terrible ordeal from the intolerable stench and the mephitic vapors arising from the putrefying vegetable and animal remains.

The hæmorrhagic malarial fever of 1880, which prevailed in the parish of Plaquemines, and more especially in and around Pointe Michel and Pointe à la Hache, was thought by local practitioners to have been aggravated, if not engendered, by the putrifaction of numerous small fish in the rice-fields after the water was drawn off. The history of medicine is not without numerous examples of the development of malignant malarial and hæmorrhagic and typhoid fevers consequent upon the exposure of the surfaces of marshes and ponds, and the consequent putrefaction of animal and vegtable matter.

THE REMEDY.

When the waters begin to recede from the low portions of the towns on the left bank of the Mississippi River, the Board of Health should be prepared to render the inhabitants prompt assistance with the necessary disinfectants.

Liberal supplies of quicklime, for covering the newly exposed earth, and copperas and cloride of lime, for drains, privies, etc., should be supplied.

The steam engines might be used to wash out the foul gutters and yards with streams of fresh Mississippi water.

As a prophylactic, the citizens would do well to take from two to five grains of quinine, in black coffee, upon rising in the morning.

I would respectfully suggest that the Committee on Drainage and Sewerage be empowered to solicit aid from the citizens for the purchase of the necessary disinfectants, and for the alleviation of the condition of our overflowed and unfortunate fellow-citizens on the right bank of the Mississippi River, who, by the accidents of war and the Reconstruction Acts, have been annexed to the ancient municipalities, and have been compelled to bear their burdens of taxation.

This overflow has added another warning to the citizens of New Orleans as to the permanent necessity of protecting all inhabitable portions of both banks by substantial levees, elevated at least six feet above the highest flood-line. The inclosed areas should be kept thoroughly drained at all times by the best and most approved forms of pumps and draining machines.

The first and highest duty of the City Administration is to protect the inhabitants from overflow, and thus prevent the increasing deterioration of property and the destruction of the lives of the people by these disastrous occurrences.

The people who pay the taxes have a right to demand that the money should be devoted to the protection of their property and the preservation of their health and lives.

During the subsidence of the waters, heavy rains fell at intervals and inspections at intervals rendered it evident that the injurious effects of the overflow was greatly mitigated by the cleaning of surface by the falling waters.

Many cases of malarial fever were caused here and elsewhere in the overflowed districts; and during the autumn and winter of 1882, I treated a large number of malarial fever patients in the wards of the Charity Hospital. Many of these cases were marked by yellow greenish swollen bloated countenances; extreme anaemias; general anasarca; ascites; hepatic derangements; splenetic enlargement; and renal troubles with albumenuria.

Albumen was found in the urine of the accute cases as well as in a certain proportion of those suffering from chronic poisoning by malaria.

WATER SUPPLY OF NEW ORLEANS.

[Extract from the Report of Joseph Jones, M. D., President of the Board of Health of the State of Louisiana, on the waters of the Bogue Falaya, Tangipahoa and Mississippi Rivers].

[Correspondence].

NEW ORLEANS, June 10, 1882.

Dr. Joseph Jones, President Board of Health, New Orleans, La.:

My Dear Sir—I send you herewith a bottle of water sent by Judge Thompson, from the Bogue Falaya.

Will you do me the favor to furnish an analysis of this water, in conjunction with the report of Board of Health upon the advantages of an ample supply of clear pure water, etc.

Yours, truly, D. B. PENN.

I send resolutions of Chamber of Commerce.

BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, June 13, 1882.

Honorable D. B. Penn, President of the St. Tammany Waterworks Company, New Orleans, La.:

Dear Sir—I have the honor to acknowledge receipt of your letter of the tenth instant, conveying the request that I should furnish an analysis o samples of water sent by Judge Thompson, from the Bogue Falaya River and respectfully submit the following as the result of the examination. * * *

[As the analysis of this water did not differ materially from that of th sample subsequently furnished by the commission appointed by the Hon orable Common Council, the report is omitted].

In conclusion, allow me to say that in accordance with your request, shall take pleasure in bringing this subject to the notice of the Board Health at the next regular meeting; but in the mean time, I shall call t attention of tho Conference Committee to your enterprise; and it will th be in your power, at any time, to consult with this committee, through chairman, Colonel A. W. Bosworth.

The Conference Committee of the Board of Health is thus constitute Colonel A. W. Bosworth, (residence, 152 Washington street; office 22 N chez street); Colonel I. N. Marks, residence, 163 Annunciation stre office, 33 Camp street); J. C. Faget, D. M. P., (residence and office, North Rampart); Honorable Ed. Booth, (residence, 505 Magazine stre office, corner Gravier and Magazine streets); Dr. George K. Pratt, r dence, 215 Camp street); office, corner of Carondelet and St. Cha streets).

Respectfully, your obedient servant,
JOSEPH JONES, M. I

REPORT OF CONFERENCE COMMITTEE OF BOARD HEALTH, STATE OF LOUISIANA.

NEW ORLEANS, June 22, 18

To the President and Members of the Board of Health.

Your conference committee, to whom was referred the chemical ana and papers concerning the properties of the water proposed to be furni by the St. Tammany Water-works Company, having carefully consi the same, have come to the unanimous conclusion that a full supp

uch water, in manner and to extent and at rates contemplated, will be ne of the greatest blessings this city has ever received. The scientific xamination and analysis to which this water has been subjected by the resident of this Board, whose report has been submitted to the committee, stablishes confidence in these waters for the highest domestic uses, po- ble, culinary and lavatory. If the company can overcome the engineering nd financial obstacles, and furnish to New Orleans, as they propose, the re streams filtered through the orange sand formation described by Pro- ssor Jones in his analysis, they will have done for our city what ancient ilders did for Babylon, Carthage and Rome, and moderns have endeavored r Boston. New York and Philadelphia.

Viewed from a hygienic standpoint, we would not be understood as minishing the just appreciation in which is held the ever-flowing, ever- e, fresh and superabundant waters of our Mississippi River, so valuable so many purposes, but it has been long evident that there was, and is, eded a relief from the monopoly which our wooden, above-ground cisterns ve enjoyed as our only resources of supply of clear, soft water for do- stic use. It would be quite unnecessary to state, much less to argue, detailed points involved in the above proposition, as against cisterns. Our present business is with the pure crystal floods awaiting us in Bogue laya, and to them we bid a hearty welcome, and say come, and come n. The sooner, and the more the better; therefore, be it

Resolved, by the Board of Health of the State of Louisiana that, guided the chemical analysis made by Professor Joseph Jones of water pro- d to be introduced to New Orleans by the St. Tammany Waterworks pany, this Board approves of the enterprise warmly, from a health t of view, and expresses the hope that the Legislature and City Council give the necessary powers and facilities, by all proper and legal methods he success of so valuable and important an undertaking.

For the Conference Committee.
[Signed] A. W. BOSWORTH, Chairman.

BOGUE FALAYA—ENGINEER'S REPORT ON THE WATER SUPPLY—NOUGH PURE SOFT WATER FOR 1,000,000 PEOPLE—CONSULTING NGINEER COOK'S VIEWS.

ow we present a part of the report of the consulting engineer, made to the St any Waterworks Company:

egard to the quality and quantity of water of the Bogue Falaya River, we have lowing certificate of Mr. John Roy.

is is to certify that I have visited and inspected the proposed sight for forming a on the Big Bogue Falaya River, St. Tammany parish, in connection with a project for plying the city of New Orleans with water, and found the same very advan- sly situated for the purpose intended. The natural advantages are very great, ing little for art to do to form a basin, ample, secure, and easily maintained. I also ed the flow of water and found it to be forty-nine millions wine gallons in twenty- ours. This was in the month of September and a dry time.

"JOHN ROY, Architect and Engineer."

. D. Cook, consulting engineer, of Toledo, Ohio, makes the following report:

Sir—Knowing that your Water Supply Association are greatly anxious to know ng as to the result of my investigation, and having been unexpectedly delayed ng such a report as I intended, and as the great importance of the enterprise merits, I send you this preliminary communication, which is intended to cor- et forth the more important characterists of the project, together with its esti- ost; and in the event that your further deliberations shall culminate in a per- organization, having for its object the actual construction of the works, I will rly day prepare a more elaborate report, accompanied with such maps and draw- may be necessary to represent in detail what I now merely give in aggregate.

The first, and indeed most important factor in the investigation, is as to an eligible source of supply of water sufficient in purity and quantity to meet the present and prospective demands of your city.

In this connection, I deem it needless, in view of the thoroughly intelligent and appreciative readers whom I have the honor to address, to more than merely advert to your great prospective growth and increased municipal importance, so easily foreseen as a resultant of the many new and important railroads which are being added to your former great facilities for transportation, or to your greatest of all rivers, which practically drains a continent and renders you easily accessible to the navigable waters of the world.

In fact, with such an array and magnitude of natural and acquired facilities, your present population becomes the minimum factor in the comparison with other and even less naturally favored cities throughout the world.

In other words owing to the intervention of several well-known and avoidable impediments, New Orleans, although taking respectable rank among the more important municipalities of the country, is nevertheless vastly below its legitimate prestige as a leading commercial city of North America.

Guided by these reflections and the logical conclusions which they suggest, I should consider it demonstrably unwise in me to reccommend, or you to adopt, a system of water supply merely adequate to your present needs; and although somewhat abbreviated in detail, the accompanying estimates and general description are intended to correctly reflect a design which will be found commensurate with the augmented municipal importance to which you are inevitably and speedily tending. In this connection, the proposition can scarcely be considered debatable that a copious supply of water of almost unparalleled purity, delivered throughout the entire city, would be found directly and almost immeasurably instrumental in advancing your beautiful city to its legitimate standard of population, wealth and sanitary conditions.

Here, again, you are manifestly fortunate beyond ordinary comparison. The territory north of Lake Pontchartrain, generally bounded on the west by the valley of the Tangipahoa and on the east by Bogue Chitto, extending beyond the northern boundary line of the State, and comprising a drainage area of more than two thousand square miles, is traversed by numerous navigable and living streams of proverbially clear, soft water. In my judgment, the territory drained by the Bogue Falaya and tributaries would furnish you an ample supply for many years to come, or until your consumption shall exceed 75,000,000 to 80,000,000 gallons per twenty-four hours.

Its present drainage area may be taken at 200 square miles, which can, when desired, be enlarged to any needed extent by drawing from the watersheds of the Bogue Chitto, the Tchefuncta, the Chappapulla, etc.

The area drained by Croton River supplying New York is taken at 300 square miles with a minimum rainfall of 35 inches, maximum 63 and mean 43 inches. Taking that o Bogue Falaya at 200 square miles, minimum rainfall 42 inches, maximum 67 and mean 51 would give an average supply per annum of 176,639,543,000 gallons; deducting for los by evaporation and other sources 85 per cent. which is considerably larger than is usuall found necessary in actual practice, and taking the remaining 15 per cent. as available would give an annual supply of 35,327,452,600 gallons, or 96.786,550 gallons per twenty four hours, or 73,000,000 gallons water per day, on a basis of least recorded rainfall.

In this instance the frequently troublous question of present purity or probable futu pollution from dense population and dangerous manufactories are scarcely worthy passing thought. With a watershed containing less than four persons to the squa mile; with almost absolute freedom from stagnant pools or miasmatic swamps; with salubrious and even healthful climate, due to pure air and pure water, your immuni from solicitude in this regard, in contradiction to the experience of most other lar cities, would be practically absolute and perpetual.

The intervening distance, composed of land and water, which separates the city fr this region, while tending somewhat to the complication of the problem and adding its cost, should, therefore, not be regarded in the single light of a misfortune. W nearer proximity and no intervening obstacle to expanding settlement would come usual source of pollution, involved from increasing population around and contiguous the sources of water supply so common to the history of other cities. Unlike many them, you would never be subjected to the expensive necessity of revisions, reconstr tions, etc., incident to seeking a source of greater safety.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA
New Orleans, August 7, 1882.

His Honor, Joseph A. Shakspeare, Mayor City of New Orleans:

Dear Sir—I have the honor to acknowledge the following:

MAYORALTY OF NEW ORLEANS,
New Orleans, La., Aug., 1, 1882.

oseph Jones, M D., President Board of Health, New Orleans, La. :

Sir—His honor the Mayor requests you to analyse the water herewith ent at the earliest convenience and make report to him of the result of aid analysis.

The water sent is that taken by the committee appointed by the Council rom the Bogue Falaya, to be tested for its purity for drinking purposes.

By direction of the Mayor,
E. L. BOWER, Chief Clerk.

OFFICE NEW ORLEANS WATERWORKS COMPANY,
Corner St. Charles and Perdido Streets,
New Orleans, August 3, 1882.

r. Joseph Jones.

Dear Sir—In making analysis of the water sent to you, we would be bliged, if in your report, you would make a comparison with the waters of he Mississippi and our rain water, in such manner as to show their rela- ive merits, for the health of our inhabitants. Yours respectfully,

JOS. A. SHAKSPEARE, Mayor.

On the second of August I received samples of the soil and waters of he "Bogue Falaya" basin and river, and in accordance with the request of our honor, present the following statement of the general results of the nvestigation :

1. *Physical, Chemical and Microscopical Properties of soil from the basin nd banks of the Bogue Falaya river.*

(*a*) *Surface Earth.*—This sample embraced the surface soil with grass rowing upon it, and extended to the depth of about 3½ inches.

Surface of a dark gray, inclining to dark blackish brown; this color radually shaded into grayish yellow earth, the darker coloring of the sur- ace was due to small quantities of carbonized organic matter.

Under the microscope the soil was found to consist of minute particles f silex and silicates, with slight evidence of organic matter.

When moistened with water, the soil formed a soft yielding mass, with ut little cohesion, and was entirely different in its physical properties, rom the thick tenacious clay of the Mississippi Valley, and more especially f the Delta.

The porous sandy nature of this soil, as well as the absence of organic atters and lime salts, and those of the alkalie and alkaline earths, estab- sh the view that this soil should be regarded as unsuited to the purposes f agriculture, unless highly enriched by manure. This soil appears to be capable of sustaining vegetation to any extent, and seems adapted only o the growth of the pine, and to the stunted forms of the more hardy rasses and plants.

The mineral acids exerted little or no appreciable effect upon this silicious oil, and the solution thus obtained yielded only a mere trace of lime.

The surface soil of the Bogue Falaya River, is thus shown to be silicious n its constitution, to a certain extent porous, and to be devoid of deleteri- us organic and mineral constituents, and to be incapable of impairing the uality of the water collected from the basin or water shed.

AND FROM THE WATER LEVEL, TWENTY-FIVE FEET BELOW THE SUR- FACE OF THE PLATEAU, LIGHT CREAM COLORED, DRY FINE SAND.

Under the microscope this sand was found to consist of numerous trans- arent and colored crystals of silicious acid and silicates.

The greatest portion of the sand consisted of transparent crystalline particles of silicic acid, varying in diameter from 1-50 to 1-100 of an inch in diameter. I discovered with the microscope no organic remains, vegitable or animal, recent or fossil in this sand.

Concentrated chemically pure nitric and hydrochloric acids, appeared to produce no perceptable or recognizable effect upon the sand.

(c) Sample, of soil taken from beneath the surface, at various depths ; two feet below the surface ; eight feet below the surface ; twelve feet below the surface ; water level twenty-five feet below the surface of Plateau.

After careful microscopical and chemical examination, these specimens were found to present essentially the same characteristics, and resembl closely the soil, differing chiefly in the degree of cohesion of the particle and density and solidity of the strata.

Under the microscope all the specimens presented the same general characters, namely—collections of fine silicious particles ranging from 1-100 t 1-500 of an inch in diameter.

This deposit, although presenting some of the appearances and properties of a light-colored clay, more nearly resembled a soft, incoherent sand rock, composed chiefly of minute particles of silex and silicates; and the entire formation is more porous than the ordinary clays of South Carolina Alabama, Mississippi and Tennessee.

The concentrated nitric and muriatic acids caused no effervescence with any of these specimens, and exerted little effect, only traces of lime being obtained from the filtrates.

As the entire thickness of the stratum (twenty-five feet), was of a porous silicious nature, devoid of soluble salts of lime and also of organic remains recent and fossil, it forms a natural filter for the rain-water falling upon the water-shed of the Bogue Falaya River.

GEOLOGICAL SOURCE OF THE WATERS OF THE BOGUE FALAYA RIVE

This an other rivers of Louisiana and Mississippi, on the east of the delta, derive large portions of their waters from the great orange sand formation, which characterizes the greater part of the surface of Mississippi.

The thickness of the orange sand formation is extremely variable ; originally deposited, its strata appear to have been dependent on the degree of denundation, which the strata of the more ancient formations had previously undergone. The greatest thickness observed by the learned and accomplished geologists, Professor Eugene W. Hilgard, was in a well dug at the University of Mississippi, to a depth somewhat more than two hundred feet. One hundred feet is no unusual thickness; but most commonly it varies between forty and sixty feet.

As the name indicates, the prevaling materials composing this formation, are silicious sands. They are usually colored, more or less, with hydrated peroxide of iron, or orange yellow ochre. The color thus imparted gives an endless variety of tints, whilst deposit of white sand suitable for the manufacture of glass are not uncommon.

The *Orange Sand* formation of Mississippi and Louisiana contains no fossils whatever characteristic of itself, and is without any appreciable organic matter.

The rounded shape of the grains of this great sand formation, and the relations of its materials, to those of the underlying formations, proves beyond question, that its deposition took place in flowing water. Nor can there be any doubt that the general direction of the current was from north to south, although locally changed or directed by the pre-existing inequalities of the surface.

The waters percolating through the orange sand formation at the present time are remarkable for the small amount of the salts of lime and magnesia which they contain, and may, therefore, be uniformly characterized as *free stone waters of excellent quality for drinking, bathing, cooking, washing and for various manufactories.*

RESULTS OF EXAMINATION OF SAMPLES OF WATER COLLECTED FROM THE BOGUE FALAYA RIVER BY THE SPECIAL COMMITTEE APPOINTED BY THE MAYOR AND ADMINISTRATORS OF THE CITY OF NEW ORLEANS.

The following samples of water from the Bogue Falaya River were submitted for analysis:

No. 1—Water from Bogue Falaya, taken at 8 a. m., July 28, 1882, from near bridge below Mulberry Grove. Heavy showers night before, and Bogue Falaya swollen one to two feet above ordinary.

No. 2—Water taken from the surface flow from pine flats, running into Bogue Falaya on the west side, about three miles above Covington; sample taken at 12 noon July 28, 1882, where running over edge of bank into Bogue Falaya.

No. 3—Water taken from Bogue Falaya at 12:30 a. m., July 28, 1882, at site of Marty's old mill, four or five miles below Covington.

No. 4—Water from "pond," or "slough," or "swamp," on west side of Bogue Falaya, not exceeding one acre in area. Has no present outlet to bayou. Not over six or eight inches deep. Goes dry in "dry times." Taken 1 o'clock p. m., July 28, 1882.

No. 5—Water from Bogue Falaya, taken July 28, 1882, 5 p. m., near Mulberry Grove.

No. 6—Water from Little Bogue Falaya, taken from mill pond at Pane's Mill, 12 o'clock noon July 29, 1882. Stream swollen from heavy shower last night; Mr. Page says is five feet higher than ordinary stage.

No. 7—Surface water from recent shower, taken from small branch running into Bogue Falaya on east side, near Mulberry Grove Cottage, 2 o'clock p. m., July 29, 1882.

PHYSICAL PROPERTIES.

Color.—With the exception of the samples marked respectively Nos. 2 and 4, the water was perfectly colorless; in the specimens indicated, there was a very faint, scarcely perceptible tinge of yellow. Chemical analysis revealed the fact that this color was due to vegetable coloring matter. The amount of organic matter, however, was a mere trace, and appeared to be derived from grasses and the leaves of trees. Nitrate of silver, oxalate of lime and the Baryta salt gave no deposit with any of those samples, showing that the coloration was due to a mere trace of the vegetable coloring matter.

Specific Gravity.—The specific gravity of each and every specimen did not differ from that of distilled water, 1000° at 60° F.

Deposit.—The specimens were free from any definite deposits; after standing for over twenty-four hours, a number of minute flocculi fell to the bottom. Under the microscope these light cloud-like flecks, were found to consist chiefly of the cells, spores and thalli of fresh water algae of green and brown colors, with a few small crystals of Silicic acid. Algae are found in all running streams, and without doubt their numbers are increased in the mass of the waters of a river by the aggitation of heavy and prolonged showers.

These green microscopical plants are characteristic of all collections of fresh water, and were, to a large extent, developed after the collection of the samples.

I attribute no deleterious properties whatever to these microscopic plants, which are found in even greater abundance in the rain-water, collected in our cisterns.

These samples of the Bogue Falaya water, therefore, may be described as clear, transparent and free from any distinct deposit or sediment; with a specific gravity similar to that of distilled water, and with the general characteristics of rain-water.

CHEMICAL EXAMINATION.

Careful testing with such reagents as the nitrate of silver, oxalate of ammonia, and Baryta salts, revealed the absence of the sulphates and chlorides, and the calcium compounds.

No more effect was produced upon these reagents than would have been caused by pure rain-water, collected in the country where the atmosphere would have been free from the impurities characteristic of the atmosphere of large cities.

Upon evaporation, in any small quantity, such as from two to four fluid ounces of the samples of water, no appreciable saline residue remained.

GENERAL CONCLUSIONS.

From the preceeding examination, I regard the water of the Bouge Falaya as pure, uncontaminated by saline or organic matters to any appreciable extent, and as suitable for drinking, washing and cooking, and also adapted to the use in boilers, and in all manufactures as those of paper and cloth, in which it is necessary to employ pure water, free from sedimentary matters.

EFFECT OF ABUNDANT RAINS.

It should be borne in mind, that these samples of water were taken after and during the presence of frequent rains, and that the Bogue Falaya, like the Mississippi and other streams, at this moment, is swollen to its greatest capacity.

The sample of water submitted to me for analysis by Governor D. B. Penn, was taken at a somewhat lower stage of the river, and in this sample nitrate of silver and oxalate of ammonia produced only a slight cloudiness, whilst cloride of barium produced no deposit. This sample was free from organic matter, but contained traces of the chlorides and the calcium compounds.

From this comparative examination we gather that the chemical composition of the Bogue Falaya water may vary within certain limits, in accordance with the greater or lesser rainfall. The same remark applies also to the waters of the Mississippi River.

In the year 1869, at the request of General Braxton Bragg, I examined microscopically and chemically, the waters of the Mississippi and of the Bogue Falaya and Tangipahoa River, from the iron wells and cisterns and natural wells of the city; even the various forms of ice, natural and artificial, consumed in New Orleans, were included in the extended analysis. Only a fragment of this report was published, and I have never been able to secure my original manuscript. I would, however, respectfully refer your Honor to the following extracts from this report, as embodying replies to one or more of your inquiries, and also relating to subjects of great sanitary importance to the citizens of New Orleans.

At the time that this report was made, Colonel A. W. Bosworth (now of the Board of Health) was President of the City Waterworks, and General Braxton Bragg was Superintendent and Chief Engineer.

EXTRACTS FROM REPORT OF SUPERINTENDENT AND CHIEF ENGINEER.

SUPERINTENDENT'S OFFICE, CITY WATER WORKS,
NEW ORLEANS, January 15, 1870.

To the Board of Commissioners, City Water Works:

Gentlemen— * * * * * * * * * *

WATER SUPPLY.

CONSUMPTION AND WASTE.

In seeking a source of water supply, we must examine, first, its quality; second, its quantity; and third, the cost of introduction.

Unless the quality is such as to recommend it as wholesome and suitable for domestic purposes, it is useless to look further; for the more abundant the supply, and the cheaper it could be had, the greater the objection.

The quantity to be obtained should be sufficient to meet all reasonable prospect for future increased consumption. And the cost must be within the available resources of the community.

We are eminently blessed in having the three conditions fulfilled, in the immenee volume which the Mississippi unceasingly pours by our very doors.

ANALYSIS OF THE WATER SUPPLY.

Some prejudices, in the absence of scientific analysis, have existed against the water of the Mississippi, predicated almost entirely on the apperance given by the matter held in *suspension.* We have been long taught, however, by the habits of our oldest settlers, and by the constant practice of our seafaring people, to regard this water as pure and wholesome. To place the matter at rest and beyond question, specimens of the water were submitted to the able Professor of Chemistry in the University of Louisiana, Dr. Joseph Jones, whose report is submitted herewith. It will be seen he pronounces the water of the Mississippi, obtained by our works, remarkably pure and wholesome. Even the few foreign substances found—principally common salt and carbonate of lime—are regarded by him as beneficial, in such small quantities.

The great purity of the Mississippi water at this point is readily accounted for. The waters of all streams are originally derived from springs and surface drainage. The former bring from the bosom of the earth, in solution or suspension, large quantities of inorganic substances, and the latter add immense amounts of organic matter, swept from the surface. For several hundred miles above New Orleans, owing to the peculiar topography of the country, *no streams enter the Mississippi, and all surface drainage is from the river.* During the passage of the water over this distance, substances thus held and brought into contact with each other, and with the oxygen of the atmosphere, by the constant agitation and motion of the water, are decomposed, and the elements, reuniting, form new compounds, generally innoxious, the gases escaping into the atmosphere and the solids subsiding. In this way nearly all deleterious substances brought with the Mississippi are disposed of before the waters reach this point. Doubtless the mere trace of organic matter found is added to the water after it reaches the settlements just above the works.

The immense volume of water contained in the Mississippi, however, renders it almost impossible for us to contaminate it. The sewerage of London, thrown into the Thames and that of Paris, into the Seine, have a decided effect on the waters of those streams for a short distance; yet it is found to be rapidly changed, and almost disappears within a few miles. These waters, too, used in London and Paris, receive the drainage of a thickly populated country down to the point of supply.

Considering the great volume of water discharged by the Mississippi, even were it not relieved of the surface drainage for so great a distance above us, the location of half the civilized population of the world on its banks would not contaminate its waters to the extent now produced in the Thames and Seine, whose waters are used in London and Paris.

The water of the Tangipahoa River, taken from a point about forty miles from the city, was also analyzed. It is found both clear and pure, and were it not for its distance, and the cost of introduction, it would be a better source of supply even than the Mississippi.

EXTENSIONS

Economy and health both demand an early and very large extension of the works.

The saving on insurance alone would, in a few years, pay the whole cost. If the city cannot accomplish the work on a scale commensurate with its importance, it may be well to invite private enterprise and capital. No other city in this country of half the

population and commerce of New Orleans is without an adequate water supply, and all make annual additions in proportion to the progress of population.

DAILY SUPPLY AND WASTE.

The quantity of water delivered in the year was 1,915,963,251 gallons, or a daily average of 5,249,214, being a reduction of 1,017,043 gallons on the daily average of last year, due to the use of the metre and partial suppression of waste. This gives a daily average to each person for 1869, allowing ten persons to each hydrant in use, of ninety-five gallons. The highest average in any other city of the United States is in Boston, sixty gallons, and the general average does not exceed forty-five gallons. This excessive use and waste is sufficient reason why the water rates should be higher than in works where only half the quantity is taken, and were it not for the comparative economy with which the works are run, they could not be sustained. Consuming at least double the quantity of water, our people, under the present low tariff, are receiving it for about one-half what it costs in other cities of this country.

The public consumption is enormous, owing principally to the habit of running the water in the street gutters to do the work of scavengers.

The result is to cover the filth, or wash it back on the poor resident in the rear, there to reek, decompose, and pollute the atmosphere, at the expense of the public health. If this waste be considered necessary, it would be great economy to erect separate pumping works to deliver the supply. The water now used is raised on an average seventy feet above the river for the purpose of pouring it into the street gutters; ten feet would accomplish the same purpose, and six-sevenths of the expense might be saved.

Being considered public property, no one seem to care how much water is wasted, and public hydrants are opened by everybody and permitted to run at all hours. The consumption at the City Hall, for instance, is found by meter to be 6000 gallons daily, enough for all domestic purposes in sixty families. A public horse trough on the levee is found to take 24,000 gallons daily. In the markets and other public places the same extravagance prevails. Having no control over these abuses, the water-works cannot be responsible for the results.

The effect is to render a higher water rate necessary, and the party guilty of the abuse is generally the first to complain.

CHEMICAL EXAMINATION.

CHEMICAL EXAMINATION OF THE WATERS OF NEW ORLEANS, LOUISIANA, BY JOSEPH JONES, M. D,, PROFESSOR OF CHEMISTRY IN THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISIANA.

General Braxton Bragg, New Orleans, La:

Dear Sir—The sample of the waters of the Mississippi River, and of various localities withig and around New Orleans, submitted to me for analysis, by you, as Superintendent of the City Water-works, have been subjected to careful chemical and miscroscopical examination, and the following results are respectfully submitted:

No. 1.—*Mississippi River Water, from Inlet Pipe.*

When first drawn, the watar presented a turbid appearance; upon standing, the suspended matter settled, forming a light grayish, yellow deposit; and the supernatant water remained slightly turbid, from a small remaining portion of suspended matters.

The insoluble suspended matters amounted to twenty-three and two-tenths (23.2) grains to the gallon of water, and, under the microscope, were found to consist chiefly of very finely divided sand (silicic acid), and the silicates of alumnia, and contained but few remains of animalcules or of vegetable structures.

After the removal of the suspended matters, the water yielded a specific gravity similar to that of distilled water—viz: 1000 at 60°—and the amount of saline matter, upon careful evaporation, was found to be only eleven and nine-tenths (11.9) grains per gallon.

Upon analysis, it was found that these saline matters contained only traces of the sulphates of potassa, soda and magnesia, and consisted almost entirely of the carbonate of lime and chloride of sodium. Each gallon contained 2.91 grains of lime (equivalent to 5.29 grains of Carbonate of lime) and 3.378 grains of chlorine (equivalent to 5.5 grains of chloride of sodium, common salt.)

No. 1.—*One gallon (70,000 grains) of Mississippi River water contained:*

Specific gravity at 60° F	1000.
Suspended matters deposited upon standing, grains	23
Fixed saline constituents, grains	11.
Carbonate of lime, grains	5.
Chloride of sodium, grains	5.
Carbonates and sulphates of soda, potassa and magnesia, grains	1.

No. 2.—*Waters of Mississippi River* (*sample marked No. 3*), *from hydrants in office of City Water Works:*

The water was turbid, from sedimentary matters, when first drawn. Upon standing, the suspended earthy matters settled, leaving the water slightly turbid, from the presence of the more finely divided silicate of alumina. The sedimentary matters were in slightly less amounts than in the preceding sample, being only eighteen and eight-tenths (18.8) grains to the gallon. On the other hand, the fixed saline constituents were, within a fraction of a grain, similar in amount to those of the first samples, being eleven and two-tenths (11.2) grains to the gallon.

The reactions under different reagents were in like manner similar; chloride of barium producing a very slight, scarcely perceptible precipitate, whilst the nitrate of silver and oxalate of ammonia produced a more decided precipitate.

The sedimentary matter, in like manner, was found, under the microscope, to consist of minute fragments of sand (silicic acid) and of mineral silicates, with very few articles of organic matter or animalcules.

Each gallon contained 5.18 grains of chlorine and 1.45 grains of lime.

No. 2.—*One gallon* (7,0000 *grains*) *of Mississippi River water, from hydrant in office of City Water Works, contained:*

Specific gravity at 60° F.	1000.00
Suspended matter (silicic acids, silicates, etc.), grains	18.80
Fixed saline constituents grains	11.20
Chloride of sodium, grains	8.51
Carbonate of lime, grains	2.69
Sulphates and carbonates of alkalies, grains	0 05

From the preceding examination we conclude that the waters of the Mississippi, when freed from the suspended matters, are of great purity, and will compare favorably with the *drinking* water supplied to the largest and best regulated cities in the world.

The truth of this assertion is established by a comparison of the preceding results, with the results of the analyses of the various springs and rivers used in the supply of cities, as exhibited in the following table. In order to render the comparison more simple and conclusive, we have introduced into this table only the total amount of saline constituents.

* * * * * *

(This elaborate table of details is omitted).

* * * * * *

If the solid saline residue of one hundred thousand parts of the Mississippi River water be compared with the solid saline matters of the drinking waters of the noted rivers and springs recorded in the preceding table, it will be found that the drinking water supplied to the city of New Orleans compares favorably with each, and it is in fact far purer than the majority of the drinking waters heretofore analyzed by chemists. In each glass of Mississippi water less than half a grain of saline constituents are present, and this small amount, almost absolutely inappreciable in its effects upon the animal system, is composed almost entirely of common salt and carbonate of lime.

If those salts exert any effect whatever upon the animal economy, it is beneficial and not deleterious.

A point of considerable interest, in a sanitary point of view, is that the suspended matters of Mississippi river water are free from organic impurities, and consist almost entirely of finely divided silicic acid and silicicates. The suspended matters, so far from rendering the Mississippi river unfit for sanitary purposes, add to their disinfectant properties.

The health of New Orleans would be without doubt greatly promoted by flushing out the main drains and gutters continuously with full streams of Mississippi river water. The mud which would settle along the sides and bottoms of the drains would possess no noxious properties whatever of itself.

The free use of *coal tar* and gas lime and quick lime, also in gutters and drains, would aid in a like manner to arrest noxious emanations, and so preserve the purity of the atmosphere of the city.

No. 6.—*Water from the Tangipahoa River* (*marked No. 6.*)

This specimen of water was clear, transparent, and crystaline in appearance. The specific gravity was similar to that of distilled water, viz: 1000.

Nitrate of silver and oxalate of ammonia produced only a slight cloud, and chloride of barium produced no deposit.

The fixed saline constituents amounted to only five and six-tenth (5.6) grains to the gallon, and consisted of chloride of sodium. 1.41 grains, and carbonate of lime, 2.51 One gallon, (70,000 grains) of Tangipahoa water contained:

Specific gravity	1000.00
Sedimentary matters	none
Fixed saline constituents	5.60
Chloride of sodium	1.41
Carbonate of lime	2 51
Carbonates, silicates and sulphates sf potassa, soda and magnesia	1 68

The preceding analysis establishes the great purity of the waters of the Taugipahoa river.

This subject is of great importance in a sanitary point of view, and should be brought to the attention, not only of the proper authorities charged with the conduct of the sanitary police of the city, but should also be brought to the notice of the parties most interested in the preservation of their lives and health, viz: to the citizens.

The attention of the President of the City Waterworks is respectfully called, in this connection to the numerous analyses of the waters of certain Southern towns, which I have executed and published in my report to the Cotton Planter's Convention, on the "Agricultural Resources of Georgia," See pp. 245-305.

With great respect and high esteem.

I have the honor to be your obedient servant.

JOSEPH JONES, M. D.

UNIVERSITY OF LOUISIANA.
New Orleans, November 12, 1869.

The qualities of the cistern water of New Orleans vary under certain conditions, as:

1. The amount of rainfall.
2. The age and character of the cistern.
3. The nature of the roof from whence the water is collected.
4. The position and surroundings of the cistern, whether in an open lo or in a small yard close to the privy, or overshadowed by trees.
5. The presence and effects of certain manufactories, especially thos which evolve noxious gases and mineral acids.
6. The amount and character of the dust and debris of all sorts washe from the atmosphere and from the roofs of the houses by the rains.

Owing to the continuous rains of the past four weeks, the cisterns New Orleans are, and have been continuously replenished, and upon car ful chemical examination I find that they afford water of great purit yielding the specific gravity of distilled water, and giving similar reactio with chemical reagents.

Upon more extended examinations, however, at different seasons of t year, I have observed differences dependent upon the age of the cister the amount of water received and discharged, the care with which t sediment has been removed at regular intervals, and the position of t cistern with reference to trees and privies, the character of the roo whether wood, slate or metal.

Without doubt the gaseous matters arising from privies and from certa manufactures, as well as the particles of dust which float in the air a rest upon the roofs of houses are absorbed by the descending rains a finally reach the receptacles called cisterns.

Dust is highly complex, and represents the contents of streets a gutters.

How far the poisons inducing yellow fever, scarlet fever, Asiatic chole and malarial fever, may be dissolved by the descending showers, finally affect the population through the medium of the water collected cisterns has not been determined, but this subject is worthy of careful vestigation.

It has been asserted that certain parasites and their larvæ may be int duced into the human system by the medium of drinking water.

It must, however, be admitted that as a rule the cistern water of N Orleans will compare favorably with the water supplied to the majority

the large cities of this and other countries, and that the remarkable exemption of her citizens from the various forms of calculous disorders is due to the freedom of the cistern water from calcium and magnesium salts.

The abundant supplies of rain-water furnished by nature to the citizens of New Orleans is shown in the accompanying table, drawn up from authentic sources.

In this valuable table we have recorded the daily rainfall in New Orleans during a period of forty years.

All estimates as to the capacity and value of cisterns, as well as to the number, length and capacity of gutters and canals for the proper drainage of New Orleans, must be based upon the data furnished by this and similar tables, which embrace the *daily rainfall.*

The annual and monthly rainfall does not correctly illustrate the problems involved in the questions of surface drainage and of water supply for drinking, cooking and washing.

The periods of drouth, with the minimum water supply, as well as the periods of heaviest rainfall, must be carefully estimated.

GENERAL CONCLUSIONS.

1. The Mississippi River water varies in chemical composition within certain limits, in accordance with the temperature and rainfall; but at all times when freed from the usual deposit it may be regarded as a wholesome drinking water.

2. For purposes of drinking, bathing and manufacturing the Mississippi water should be freed from the heavy deposit which varies in quantity at different seasons, and with different stages in the main river and its tributaries.

3. As a rule, the waters derived from the soil of New Orleans by means of wells are wholly unfitted for drinking.

4. The cistern water of New Orleans is liable to contamination from many sources, and varies in composition with the seasons.

5. The waters of the Bogue Falaya are pure, of stable composition, are not liable to contamination, and are free from sediment, and require no filtration, and are, therefore, suitable for drinking, washing and manufacturing. With respect I have the honor to remain your obedient servant,

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

LAKE PONTCHARTRAIN

CYPRESS SWAMP

METAIRIE RIDGE

GENTILLY RIDGE

TOPOGRAPHICAL and DRAINAGE MAP
OF
NEW ORLEANS,
PREPARED FOR
JOSEPH JONES, M. D.,
BY
T. S. HARDEE, Civil Engineer.

POPULATION of the CITY OF NEW ORLEANS.
CENSUS OF 1880.

	FIRST DISTRICT				
	White Males	White Females	Black Males	Black Females	Wards
	SECOND DISTRICT				
	THIRD DISTRICT				

TOPOGRAPHICAL and DRAINAGE MAP
OF—

NEW ORLEANS,

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POPULATION of the CITY OF NEW ORLEANS,

CENSUS OF 1880.

	White Males	White Females	FIRST DISTRICT Black Males	Black Females	WARDS	DISTRICT
1st Ward	5,225	6,318	1,123	1,769	14,435	
2d "	6,167	7,000	1,100	2,152	16,819	
3d "	9,310	9,239	3,372	1,270	26,191	57,445
			SECOND DISTRICT			
4th Ward	1,077	1,091	1,547	2,102	12,717	
5th "	6,220	6,676	2,706	3,504	19,296	
6th "	4,349	4,495	1,502	1,940	12,686	44,699
			THIRD DISTRICT			
7th Ward	5,969	6,451	3,373	1,317	20,130	
8th "	3,925	4,274	774	905	9,878	
9th "	6,190	6,903	1,197	1,290	15,580	45,588
			FOURTH DISTRICT			
10th Ward	6,878	9,047	1,332	1,934	19,192	
11th "	6,703	7,906	1,497	2,147	18,343	37,535
			SIXTH DISTRICT			
12th Ward	3,202	3,407	896	830	8,305	
13th "	1,547	2,004	781	973	5,405	
14th "	790	901	500	328	2,519	16,029
			FIFTH DISTRICT			
15th Ward	2,322	2,640	1,650	2,185	8,856	8,856
			SEVENTH DISTRICT			
16th Ward	540	604	963	1,629	3,116	
17th "	944	961	594	626	3,121	6,237
TOTAL	74,242	84,220	24,921	32,310		216,350

SCALE

OUTLINE OF THE HISTORY, THEORY AND PRACTICE OF QUARANTINE.

RELATIONS OF QUARANTINE TO CONSTITUTIONAL AND INTERNATIONAL LAW AND TO COMMERCE.

—BY—

OSEPH JONES M. D., PRESIDENT OF THE BOARD OF HEALTH, STATE OF LOUISIANA.

Quarantine regulations established in Europe before the discovery of merica; the English colonies of North America adopted quarantine reg- ations before their separation from Great Britain; all the essential ques- ons relating to quarantine and the relations of the individual States to e General Government thoroughly discussed and settled shortly after the rmation of the Federal Union.

Quarantine regulations relate to the preservation of the health and lives the people, and are based upon the inalienable rights of self-preserva- n. The power to establish and enforce quarantine by the individual ates, not a regulation of commerce in violation of the provisions of the deral Constitution, but the exercise of the inherent and inalienable police wers of the individual States, which were never surrendered to the Gen- l Government.

Quarantine recognized by international law for the common security of tes against diseases regarded as importable. Quarantine protects the lth of the people, and facilitates and fosters commerce by rendering vices to ships and their cargoes, crews, passengers and owners.

E THEORY AND PRACTICE OF QUARANTINE, AND ITS RELATIONS TO CONSTITUTIONAL AND INTERNATIONAL LAW AND TO COMMERCE.

Ve propose to discuss and examine, in the light of history, and of estab- ed facts and principles in constitutional and international law, the owing questions:

Has a sovereign State, as one of the integral parts of the United States merica, an inherent right to establish and maintain quarantine for the tection of her citizens from the introduction of foreign pestilence?

Has a State an inherent and constitutional right to levy a tax upon indi- a. essels for the sanitation of ships, their crews and cargoes, and for the usion of pestilence?

3. *Shall the inspection and fumigation and disinfection fees, imposed for the support of quarantine, be regarded as a tax on commerce, in violation of the provisions of the Constitution of the United States, without any compensation or service rendered the ships and ship owners, and men engaged in commerce?*

In reply to the above questions, we submit the following propositions and facts:

(a) Quarantine regulations were established in Europe before the discovery of the American Continent.

The notion that the plague was imported from the East into Europe seem to have prevailed in all ages. But it would appear that the Venetians wer the first who endeavored to guard against its introduction from abroad, b obliging ships and individuals from suspected places to perform quarantine

The term quarantine is derived from the Italian *quaranta*, forty; it being generally supposed that if no infectious disease broke out within fort days, or six weeks, no damage need be apprehended from the free admi sion of the individuals under quarantine. During the period of forty days also, all the goods, clothes, etc., that might be supposed capable of retain ing the infection, were subject to a process of purification, performed eith on board the ship or on establishments denominated *Lazarettos.*

The regulations for quarantine were issued by the Venetians as early 1484. Since this date they have been gradually adopted by every oth country.

Various preventive regulations had been enacted in England for a lo time, but in this country quarantine was not systematically enforced t after the alarm occasioned by the dreadful plague of Marseilles in 17 The regulations then adopted were made conformably to the suggestio of the celebrated Dr. Mead, in his famous "*Discourse Concerning Pestilent Contagion.*"

(b) The English Colonies of America adopted quarantine regulations b before their separation from the mother country and the achievement of th independence.

The following records from the history of the individual colonies ill trate and sustain the preceding proposition:

SOUTH CAROLINA.

By act of October 8, 1698, "All vessels are forbidden to pass to the east of Sulliv Island one mile, without permission of the Governor, under penalty of being fired on the gunner and paying a fine. The pilot is required to ascertain from the captain be passing that limit, if any contagious disorders are on board, under penalty of £50."

By act of June 7, 1712, Gilbert Guttery was appointed health officer for the Provi of South Carolina, to inquire "into the state of the health of all persons as shall ar on shipboard." He was to go on board all vessels as soon as they crossed the bar, make these inquiries; also concerning the deaths on the passage; search the ship order all the men on deck for that purpose. He was empowered to administer oath captains and crew touching this law, and upon cause to send persons to the pesthous Sullivan's Island, to have the vessel fumigated, and to detain her for twenty days, w out communication, except with Sullivan's Island. The diseases then specified w "the plague, small-pox, spotted fever, Siam distemper, Guinea fever," etc. The pen was £100. The pilot must wash himself and his clothes before coming ashore, after b aboard of any vessel arriving from South of 30° N. Lat., under penalty of £20.

No person shall visit such ship before the commissioner posted the public certific under penalty of £100, or being whipped through the public streets. Nor shall the tain send a boat ashore before said certificate, under penalty of £50, together with a feiture of all negroes and other goods he may put ashore.

No person should leave the pesthouse without permission, under penalty of £30.

The commissioner must allow no one but himself to go aboard, and he must cle himself before his return. The commissioner has full charge of the pesthouse, fur

g house, repairs, conveniencies to the value of £15 per annum. Persons in the pest-use must maintain themselves, the commissioner causing the provisions to be carried re at market prices. The commissioner's salary to be £40.

Act of September 21, 1721: The same provisions as the act of 1712, except the pilot, all, wind and tide permitting, bring the said ship above Johnson's Fort, so that she y be under the command of the guns of the fort." That the captain or the doctor, or cer and sailor shall apply to the commandant of said fort, and answer whether "the ce from whence he came is healthy; whether his ship's company is in health, and how g since." The commandant may permit him to pass, but he must then apply to the vernor, who being satisfied, the ship shall be "permitted to enter and trade." If the mmandant or Governor is not satisfied, the ship shall be removed to a place, by them ignated, for quarantine. The consignee may furnish provisions to his vessel under direction of the Governor; but no one shall go on board without his permission, or boat shall be confiscated. In case of a hurricane, the quarantine ship may seek ety up the river. The provisions of this act extend to any other port in the province South Carolina.

ct of September, 1738: The Spanish in Havana and St. Augustine being about to in-le the province, and there being fear of the spreading of the small-pox, no person ing small-pox shall come within two miles of Charleston, or be inoculated within t limit, under penalty of £500. The justices of the peace shall remove infected per-s outside of the limits and guard their houses. Persons refusing to assist the justice e fined £20. All infected houses in the country shall be advertised on the public d and at the church; and a white rag tied to the gate of the house or plantation, ler penalty of £50. The justices are charged with cleansing infected places.

ct of May 29, 1744:

ne thousand pounds appropriated for Sullivan's Island Pesthouse. No ship with roes from Africa shall pass to town without the negroes staying ten days at the pest-se, or carried on shore five out of ten days for purification upon pain of confiscation. one from shore shall go on board said ship; and no one leave said ship under penalty whipping. The captain, in passing Fort Johnson, shall swear conformity.

ct of January 13, 1847:

he form of pilots' oath, when receiving his branch, that he will make inquiries for tagious diseases, is enacted. Pilot shall receive ten shillings *per diem* while at quar-ine, unless captain informed him before he went aboard. No one to leave the vessel hout a pass. No vessel coming from any part of America where the commander at t Johnson has heard there is plague, malignant fever, small-pox or any other con-ious distemper, shall be permitted to pass Fort Johnson if the officer of the vessel used to swear, unless with the consent of one of the doctors signing, date, Moultrie, rtin Caw and Rind. Their fee for visiting vessel, £7 10s and boat hire. The com-ndant at Fort Johnson shall signal for the doctor.

imilar acts reaffirming the powers and provisions of the preceding acts were passed ril 13, 1756; April 7, 1759; May 30, 1760; March 26, 1784; March 17, 1785.

fter the Revolution, and the confederation of the original colonies under the Repub-of the United States of America, the powers and provisions of these and similar acts ting to quarantine were reaffirmed and enforced by the State of South Carolina by acts of December 19, 1796; December 16, 1797; December 19, 1809; December 20, 2; December 21, 1839; December 19, 1849; January 28, 1861; September 26, 1868; rch 9, 1869, 1872; February 7, 1875; December 23, 1878; December 23, 1879.

he provisions of the act of December 19, 1809, are especially worthy of note: "The rantine officers may board by force of arms any vessel, and detain crew and passen-s who may violate quarantine; the penalty of the latter is from $100 to $2000 fine. A t shall lose his branch for violating quarantine, as well as be fined. Any vessel vio-ing quarantine laws may be fired into."

MASSACHUSETTS.

nformation having reached the Colony of Massachusetts-Bay that the "plague, or grievous infectious disease," had "raged exceedingly in the Barbadoes and other nds of the West Indies," quarantine measures for the prevention of the introduction a disease so fatal in its character were passed by the General Court in March, 1647 or .

he General Court legislated on the subject of quarantine, eleventh October, 1665; th October, 1667, and on the eighteenth of July, 1700, the Province of Massachusetts sed a stringent quarantine act, entitled "An Act for the better prevention of the eading of infectious sickness."

his act contains an important provision, compelling the parties bringing infectious ease within the limits of the Colony to pay all costs and damages.

he power of the Colony to impose fines for violation of quarantine regulations, and to pel the infected vessel and crew to maintain themselves, and to pay all "the *costs* l charges arising therefrom," was clearly recognized and formulated in the act of 1700.

This is clearly set forth in section 3 of the said act:

Sec. 3. "That if any passenger or seamen arriving in any ship or vessel visited with the small-pox, or other pestilential or infectious sickness, upon her voyage, shall presume to come on shore before license had aforesaid, it shall and may be lawful to and for any justice of the peace to require or send such person or persons, with their clothing and bedding, on board such vessel again, or to confine them to such other place or places as such justice shall judge most suitable for preventing of infection; and all the costs and charges arising therefrom to be answered and paid by the passenger or seamen so offending as aforesaid, who also shall forfeit the sum of £20 to the use aforesaid, and to be recovered in manner as aforesaid."

Acts were passed relative to quarantine and contagious diseases in 1701, 1702, 1716, 1717, 1719, 1721-22, 1728-29, 1737, 1738, 1743-44, 1749-50, 1757, 1797.

The acts passed by the Legislature of Massachusetts after the Revolutionary War greatly perfected the system of quarantine. The act of 1797 is specially worthy of note.

It appears that the early jurisdiction over quarantine was exercised by the Governor and Council of the Colony of Massachusetts Bay. Later it was carried on by the same with the assistance of the selectmen of the town of Boston. These selectmen had the full power over quarantine conferred on them by an act passed in the year 1797. By the appointment of a Board of Health in 1799 all the powers of the selectmen over quarantine were delegated to this Board by an act passed June 20, 1799, and continued until the Board ceased to exist.

Acts regulating quarantine were passed in 1816, 1821, and at various later dates.

QUARANTINE LAWS OF RHODE ISLAND.

The first law passed by the General Assembly of Her Majesty's Colony of Rhode Island and Providence Plantations, in relation to quarantine, was during the session at Newport on the twenty-seventh day of February, 1711, entitled "An act to prevent the spreading of infectious sickness."

The following are the main provisions of this act.

"Whereas contagious destempers have been several times brought into the Colony, by the masters of ships and other vessels, coming into the several ports of this Colony from places that are infected therewith; for the preventing whereof for the future,

"Be it enacted by the General Assembly, and by authority of the same, that the master or commander of any ship or other vessel, that shall come into any port or harbor of this Colony, and shall in their passage hereto have any person or persons sick on shipboard with the small-pox, or any other contagious disease, or shall come from any port or place where any contagious distemper is brief or prevalent, shall not bring to anchor their ship or vessel, in any of the ports of this government, within the distance of one mile of any public ferry, pier or landing place; or if any vessel or vessels that are at anchor therein, shall land or suffer any person or persons on board such ship or vessel to be landed, or suffer any persons to come on board such ship or vessel without a license first had from the Governor of this Colony for the time being, if they shall anchor in the harbor of Newport, or in his absence, from one or more justices of the peace of said town, and if they shall anchor in any other harbor of the Colony, such license shall be first had and obtained from some one or more justices of the peace of such town, under penalty of forfeiting one hundred pounds, good and lawful money of this Colony, to and for the use of the Colony, to be recovered by the General Treasurer of the Colony in the general courts of trial of this Colony; by bill, plaint, or information, and where the offender or offenders herein shall have no essoin, protection or wages of law allowed."

It was provided that passengers or mariners from infected vessels landing without permit should be arrested by any justice of the peace, and either returned to the vessel or confined in such place or places on shore as would prevent the spread of the infectious disease. Persons thus offending "shall answer, satisfy and pay all charges that shall arise thereon, and shall forfeit twenty pounds good and lawful money of said colony for and for the use of the colony, to be recovered as aforesaid."

"And if the offender or offenders have not estate sufficient to satisfy and pay the same that they shall be set to work, by the discretion and at the discretion of the judge of such court where such cause shall be tried, until the same be fully satisfied and paid."

It was further provided that, if any person or persons, passengers or mariners or slaves notwithstanding the preceding precautions, "shall be landed from on board any ship or other vessel, and shall, after being landed, be taken sick with the small-pox or any other infectious distemper, that then and in such case it shall and may be lawful for any assistant or justice of the peace of any such town where such case shall happen to remove such sick and distempered person and persons to such convenient place as shall to them appear to be necessary, to prevent the spreading thereof; and the person or persons so removed, if free, to pay the charge thereof, and shall be recovered in any court of record within this colony, by the person or persons that shall disburse the same; and

persons so removed be slaves, then the owners thereof shall pay the same; and if the ves are consigned to any person within the Government, then such person to whom signed shall pay the charge of the same, to be recovered as aforesaid."

n the preceding provisions of the first *Quarantine Law* passed by the General Assembly he Colony of Rhode Island and Providence Plantations, one hundred and seventy-two rs ago, and sixty-four years before the commencement of the American Revolutionary r, the absolute control of the colonial government over vessels, masters, crew, passen- s and slaves, with reference to all regulations for the exclusion of foreign pestilence, nnounced, and the principle established that the ship, with its officers, mariners and sengers, whether free or slave, were liable for all expenses caused by sickness.

n the following section the principle is established that masters of ships were respon- e for all expenses incurred during the inspection of said ship by the authorized agent gents of the colony.

e it enacted by the authorities aforesaid, That the naval officer shall keep this act pub- set up in his office, for the view of all masters of ships and other vessels that shall r with him; and the said naval officer is hereby empowered, upon any information him given of any ship or vessel arriving in this harbor, that any infectious distem- is aboard, to send on aboard of said ship or vessel a doctor to examine the e, as need shall require, and return thereof to the governor, or in his absence, to some e assistants or justices of the peace of the town of Newport, to make reports, that care may be taken therein; *and the master of such ship or vessel shall pay all charges ing therein; and if he refuse to pay the same, it shall be recovered by the naval officer in court of record within this colony.*"

the following act every vessel was required to anchor at Fort George, under heavy lty:

June, 1731: *An act passed by the General Assembly of Rhode Island at Newport*, June, . to prevent vessels coming into the government from places infected with the small- "

Every master of any ship or other vessel that shall come into the harbour of New- and shall not bring to his vessel (at the fort, Fort George), when the gunner shall shot at him, shall for the first shot pay ten shillings, and for the second twenty ings; and for every shot after the second, five pounds; and the naval officer shall, e he clear said vessel, receive the same, or shall have three shillings as a fee for the . All which fines to be for the use of the colony."

bruary, 1743: "*An act passed by the General Assembly of Rhode Island, in February, to prevent the spreading of small-pox and other contagious sickness in this colony.*"

e following is the preamble:

Whereas, the small-pox and other contagious distempers have been several times ght into this colony by masters of ships and other vessels coming from infected s, which has proved of pernicious consequence to the trade, and greatly endangered ives of many of the inhabitants of this colony, and occasioned a very great expense e town of Newport in particular;

nd whereas, the laws to prevent the same, by reason of their great number, and the us occasions on which they were made, are become perplexed and intricate."

e first section repeals all laws heretofore made relating thereto, and declares that following rules and orders for the future shall be kept and observed.

e first and second enactments repeat, with but slight and unimportant differences, ortions of the law of 1711.

e act of 1743 enjoins—

That the Governor, Deputy Governor, assistants, justices and wardens, as aforesaid, d they are hereby empowered and directed to send a doctor or other suitable person amine into and to make report to him or them, respecting, of the true state of such l and the people on board, at the charge of the master or commandant of said vessel; he naval officer is hereby forbid to clear out such vessel till said charge (having adjudged and settled by the Town Council of the town where such vessel shall ar- is fully satisfied and paid.

That the Town Council of Newport or other town as aforesaid, be and they are hereby wered and directed to confine on board said vessel, or send to some pesthouse, all ns, mariners or passengers, or others, that came in said vessel, for a convenient time such of them as have or are liable to have the small-pox, or other infectious dis- er, are perfectly recovered and cleansed from said distemper, or have passed a suita- uarantine, and also all other persons that have gone on board such vessel without e, as aforesaid, at the charge and expense of such persons respectively, and also all persons that came in said vessel, until they have been sufficiently aired and sed.

at, the Town Council of the town where such vessel arrives, be and they are hereby wered and directed to appoint two persons to take effectual measures that all goods, merchandise imported in such vessels, which they think liable to hold and com-

municate the infection, be landed on some of the islands in the Naragansett Bay, and exposed to the sun and air and cleansed, not exceeding ten days, nor under six days, before they are permitted to be brought into any house, shop or warehouse, other than where they are cleansed as aforesaid; and when such goods are sufficiently aired and cleansed, said persons shall give the owners or possessors thereof a certificate; and the Town Council shall allow or order said goods to be delivered to the owner or owners thereof; and the charge and expense of landing, airing and cleansing such goods, wares and merchandise, shall be borne by the respective owner or owners; and all goods that shall be judged by the Town Council not liable to hold the infection shall be delivered to the owner or owners, without delay and expense of airing, so soon as may be consistent with the safety of the town in regard to parts of the cargo. And all goods, wares or merchandise imported into any town in this Colony by land from any place infected with the small-pox or other contagious distemper shall be aired, cleansed, at the discretion of the Town Council of such town, and at the expense of the owner or owners thereof."

"That, all goods imported in such vessel as aforesaid, that shall be clandestinely landed or brought into any house, shop or warehouse—without certificate or allowance as aforesaid, or that shall be imported by land as aforesaid, and not cleansed or aired by order of the Town Council as aforesaid, shall be forfeited; one-third to and for the use of the Colony, and the other two-thirds to him or them that shall inform, and sue for the same in the inferior courts of Common Pleas, in the country where such offense shall be committed. And all assistants, justices and wardens are hereby empowered and required upon information given them, to seize and secure all such goods, wares and merchandise in their respective jurisdiction and legal trial.

"That the Town Council of Newport, or other town as aforesaid, be, and they are hereby, empowered and directed to fix, settle, and adjust all wages and charges demanded by persons employed by them to secure such vessel or to air and cleanse such goods, or to attend upon and nurse such person, as aforesaid. And that if any owner, freighter, mariner or passenger, as aforesaid, shall refuse to pay such wages and charges, so settled adjusted and fixed by the Town Council, that then the Town Treasurer of such town is hereby empowered and required to sue for and secure such wages and charges, if above five pounds, in the Inferior Court of Common Pleas in the county where such charge shall be adjusted and settled; and if under that sum, then before any two justices or wardens, as in the case of other actions.

"And the judges of such court where the action is brought are hereby empowered to lay double costs for the plaintiff, any law, custom or usage to the contrary notwithstanding.

"That for the better security of the payment of what charges may arise for the nursing or attendance upon any sailor or mariner belonging to such vessel, as aforesaid, the master thereof is hereby required to stop payment of the wages due to such mariner until certified from the Town Council that such charges are fully satisfied and paid, on penalty of paying the same so far as the amount of the wages so paid by him; and no court in that Colony shall make up judgment for any such wages until satisfaction be made as aforesaid. And this act being pleaded in any court, when such wages, if sued for by such mariner, shall be a temporary bar of such action, any law, usage or custom to the contrary notwithstanding. And the master or owner of any servants or slaves on board such vessels, or the persons to whom such slaves are consigned, shall pay all charges arising from them for their nursing or attendance.

"That the master of any ship or other vessel coming into the harbor of Newport who shall refuse to bring to his vessel when the gunner of Fort George shall fire a shot at him, shall pay ten shillings for the first shot and twenty shillings for the second, and five pounds for every shot afterward, to and for the use of the colony, and three shillings to the Naval Officer, as his fee for receiving the same, who shall not clear out said vessel till the same be paid."

The remainder of the act relates to the prevention of small-pox from the towns and colonies of New England, and to the isolation and control of this disease within the county and town of Newport.

It will be observed that all the essential principles of the quarantine system of Louisiana, as established in 1855, had been established and enforced by the laws passed by the General Assembly of His Majesty's Colony of Rhode Island and Providence Plantations in relation to quarantine, in 1711, 1731 and 1743.

The acts of 1747 and 1748 announced the same principles.

The act of 1748 declared "that all the expenses incurred" in confining the sick with contagious diseases on board, or in sending them to the pesthouse, as well as all expenses of nursing and infection, "*shall be at the charge of the owners.*"

The most essential provisions of the act of 1748 are as follows:

"*Therefore be it enacted*, That no infected vessel be anchored within one mile of any nding place, under the penalty of sixty pounds; that no person shall come on shore thout a proper license; that a physician shall be sent on board to examine the vessel d crew, and make a true report of the same; that the Town Council of Newport, or her town, shall have power to put a suitable person on board to prevent communica- n; that the said Council shall have power to confine the people on board or send them the pesthouses, and that all goods arriving in such vessels shall be properly aired and ansed.

"That all the expenses incurred in consequence of said vessels, shall be at the charge the owners."

May 1752, "An act to prevent the small-pox from being brought into the Colony by angers and travellers coming from infected districts."

In May, 1776, the General Assembly passed an act permitting inoculation for the small- x in this Colony.

An act was passed by the General Assembly in 1798, confirming the sanitary laws en- ed in 1743 and 1748, and authorizing the Town Councils to make regulations for the servation of the health of the inhabitants, and the Governor to appoint health officers every port deemed by him necessary, in order to visit all vessels suspected of having ntagion on board, and to carry into effect the provisions of this act.

Acts were passed in 1806, 1816, 1822 and 1840, by the General Assembly, conferring m time to time on the Town Councils, or the Board of Aldermen in the several towns, fficient authority to guard the people against contagious diseases.

With regard to the yellow fever and cholera, the Town Councils acted efficiently, iving their authority from the ancient laws, given here, against small-pox and other ntagious diseases.

STATE OF NEW YORK.

The first quarantine act seems to have been passed by the Colonial Legislature in 1755; vious to this date, however, there were many acts of the Council of New York, as those September 17, 1702, April, 1714, January 31, 1716, April 1, 1742, designed to prevent importation of small-pox or other malignant fevers of the West Indies, and their ead in the provinces.

In 1755 the Colonial Legislature of New York passed the first quarantine law, entitled n act to prevent infectious distempers being brought into this Colony, and to hinder spreading thereof."

ections 1 and 2 defined the place and mode of performing quarantine, and specified duties of officers and pilots, and fixed the penalties for the violations of this act.

The third section of this law provided for the appointment of "*some surgeon or physi- n to inspect all vessels*," and fixed his compensation for this service, and was as follows: "Sec. 3. That in case any vessel shall come from any place visited with such contagious temper, or have any person or persons on board actually infected with the small-pox, llow fever, or other contagious distemper, and the commander of such vessel, upon mand made as aforesaid, shall not make a true discovery thereof, such commandant ll forfeit the sum of five (two) hundred dollars. And the Governor or Commandant- Chief of this Colony is hereby authorized and empowered to appoint some surgeon or sician to inspect all vessels and persons suspected of having on board, or being vis- l with any of the said infectious distempers, who is hereby required immediately to go board of such vessel and make strict inquiry in the premises, and report the same ordingly, for which inquiry and examination such surgeon or physician shall be paid the owner or master of the said vessel, the sum of twenty-eight shillings for each such mination."

There is evidence to show that Dr. John Bard was the first physician (quarantine cer) appointed under the act of 1755, and that he continued in office until he left the in 1773.

quarantine act, with similar provisions, was enacted on the ninth day of July, 1756, only amendment being to raise the fee of the surgeon or physician appointed to visit nspect vessels, from twenty shillings to one pound eight shillings.

The law of 1756 having lapsed by expiration of time, a new law, with essentially the e provisions, and retaining the inspection fee of the quarantine surgeon or physician wenty-eight shillings for each inspection, payable by the master or owner of the sel, was enacted March 24, 1758, entitled "*an act to prevent the bringing in and spread- of infectious distempers in the Colony.*"

The law of 1758 was re-enated December 13, 1763, to continue in full force until Janu- 1, 1768; on the 24th of December, 1768, it was continued in full force until January 775; it then expired by limitation, and as the Revolutionary War came on, was not nacted. It was not until the seventh session of the State Legislature that the sub- t of quarantine again attracted the attention of the government; and on the fourth May, 1784, an act was passed, entitled "An act to prevent the bringing in and spread

ing of infectious distempers in this State," which was in intent, and nearly in terms, the same as the law of 1758. The title was the same as the law of 1758, except the substitution of the word "State" for that of Colony.

In the law of 1784 the term "ports and harbours of the State" are substituted for "ports and harbours of this city;" in that of 1758 the health officer was appointed by "the Governor or Commander-in-Chief of the Colony, the person so appointed was "some surgeon or physician," and in 1784, "a physician," the fee of twenty-eight shillings was to be paid the health officer for each visit and report, by the commander of such vessel; the fines and forfeitures under the act of 1758 were to be paid, one-third to the informant, and the remainder for the support of the government of the Colony, and under the act of 1784, they were to be applied to "the use and support of the light-house at Sandy Hook, for the security of commerce."

This law remained in force unchanged for ten years.

Meantime, with the renewal of commerce with the West Indies yellow fever again made its appearance in New York. In 1791 it broke out in the neighborhood of Peck Slip, and spread to other parts of the town, causing a large mortality. On the twenty-seventh of March, 1794, an act was passed "To amend the act of 1784, entitled an act to prevent the bringing in and spreading of infectious distempers in this State." In the first section it provided that the act "*shall extend to all vessels coming from any port or place whatever.*"

On the first of April, 1796, a new quarantine law was enacted, section 1 of which provided, "That a person practicing physic shall be appointed health officer for the city of New York, and that seven persons shall be commissioners of the health office for said city and by which several names of office the said persons shall be respectively known in the law."

Section 2 specifies in regard to quarantinable vessels as follows: "All vessels arriving in the port of New York from ports beyond the sea, having on board forty passengers all vessels arriving in the said port having on board a person sick with a fever; all vessels arriving in the said port, on board of which a person may during the time such vessels were at the foreign port from which they last sailed, or during their passage thence to the port of New York, have died of a fever, and all vessels arriving in the said port from places where, at the time of their departure, an infectious disease prevailed, shall be subject to quarantine of course."

The Governor was authorized to issue his proclamation declaring what other vessels to be described as coming from the countries, islands or ports therein to be mentioned, shall also be subject to quarantine; and to assign the limits to the places where all vessels subject to quarantine shall come to anchor, and remain until the health officer shall have examined them and reported "to some one of the commissioners to be free from infection." The Governor was also empowered to prohibit or regulate the intercourse by land or water between the State of New York or any place or State in the United States when he is informed that an infectious disease prevails.

The commissioners were empowered to remove to the quarantine grounds any vessel in the port of New York upon which a case of contagious disease appeared, or having on board articles which may be apprehended to contain infection; and to cause all persons and articles which may have been landed to be arrested and seized and returned to the vessel, or removed to the lazarette; also to cause all persons coming into the State in violation of the proclamation to be arrested, or if well, to be conveyed to the place out of the State from whence they had come, or if sick to be removed to the lazarette.

On the tenth of February, 1797, an act was passed to amend the act entitled, "An Act to prevent the bringing in and spreading of infectious diseases in this State."

It provided that there "shall be three persons appointed commissioners of the health office of the city of New York," who with the Health Officer, were invested with "all and singular the powers granted to the commissioners of the health office for the said city."

"All coasting vessels coming from any place south of Cape May, although not subject to quarantine, of course, shall be liable to examination, if the health officer shall deem it expedient, by some fit person to be by him deputed, who shall have such reasonable compensation for his services and paid by the commissioners as they shall deem right." Quarantine was in all cases to continue as many days as the commissioners should deem necessary. No vessel arriving in the port of New York, otherwise, and subject to quarantine of course, shall be exempt from such quarantine by reason of having previously touched or entered at any port within the United States unless such vessel shall have remained in such port for the space of ten days.

The health officer was required to report all vessels subject to quarantine which found free from infection, "to some one of the said commissioners, and he shall be entitled to receive from the master of every vessel to be visited by him or coming from a foreign port, the sum of three pounds, and if coming from a port within the Unit

ates, the sum of thirty-two shillings for his services therein;" he was empowered to put necessary questions to the persons on board any such vessel and to administer an oath. The person administering the government was authorized to cause the erection of a ilding suitable for a lazarette on Nutten Island (Governor's Island), "or on any other nd which may be deemed more eligible, which other land he is hereby authorized to rchase for the people of the State."

The Health Officer was to be the physician to the lazarette, and the "Commissioners the Health Office were to have the superintendence thereof, and employ nurses and endants, and provide bedding, clothing and provisions, medicines, and other matters shall be requisite therein."

All persons removed to the lazarette were "liable to pay a reasonable sum for their ard, medicine and attendance therein," and the Commissioners were to recover by suits their own name, if pay was refused.

The Health Officer was authorized to destroy infected bedding and clothing arriving in ssels subject to quarantine.

t is not necessary, in our argument, to trace in full the growth of the quarantine tem of New York, which has not only advanced with the growth of this mighty tropolis, located at the entrance of the great channels through which foreign commerce and emigration enter the United States, but has kept pace with the progress of itary knowledge, until its equipments have been so perfected that they now meet the hest demands of science, and promote the highest interests of commerce.

The preceding facts are sufficient, however, to establish that:

1. During her existence as an English Colony, New York exercised all essential functions of quarantine, and, in common with the other nerican Colonies, established the principle that a service was rendered to mmerce by quarantine, and that the masters and owners of vessels were ble and legally bound for the expenses involved in the medical inspecn, in the discharge of cargo, in the fumigation and cleansing of vessels, l in the removal and treatment of the sick crew and passengers.

2. New York, in common with the other original English Colonies of rth America, did not surrender her rights to conduct quarantine and to y quarantine fees after the establishment of independence and the formaon of the American Union, and the formal adoption of the Constitution of United States.

3. New York and the other English Colonies have exercised without erruption, through their existence as parts of the British empire and as dependent States of the American Union, up to the present moment, the henable right of establishing quarantine restrictions for the preservation the health of the people, and of collecting fees from the masters and ners of vessels for the maintenance of quarantine.

(c) All the essential questions relating to quarantine, and the relations of the ividual States to each other and the General Government, were thoroughly cussed shortly after the formation of the Federal Union of the independent lonies.

t is evident from the preceding facts that on the organization of the deral G rnment, in 1789, several of the seaboard States had quarane laws : id regulations, adopted by the Colonial governments, and ich had been in effect for nearly a century.

South Carolina enacted a quarantine law as early as 1698, Pennsylvania 1699, Rhode Island in 1711, New Hampshire in 1714, New York in 1758. ellow fever had several times been epidemic in seaboard towns having mmerce with the West Indies, as at Boston in 1693, Philadelphia in 1699, 1, 1747, 1762, New York in 1702, 1793, Charleston in 1699.

But it did not attract general attention, nor excite great public alarm, il the full establishment of commerce with the West Indies after the volutionary War.

Yellow fever broke out in New York in 1791, and in Philadelphia in 1793, l in both places it was attributed to shipping from the West Indies.

In the latter year the pestilence excited public alarm, especially in the neighboring States having personal and commercial intercourse with Philadelphia. New York, Charleston, Baltimore and Annapolis took active measures, and finally established rigid land quarantine against Philadelphia.

At the close of the last century, when yellow fever became widely epidemic, the disease was regarded as contagious and infectious, and precautionary measures of the most rigid character were devised to prevent the contact of the sick with the well.

Maritime and land quarantines were established, and the latter were enforced with the trusty shot-gun, as in the recent epidemic of 1878.

All the scenes of abject fear and brutal cowardice of 1878 had their counterpart in 1793, 1794 and 1795. City quarantined against city and State against State, and travelers were subjected to the most rude and brutal indignities.

In December, 1795, the Fourth Congress met at Philadelphia at the close of one of the most alarming and wide-spread epidemics of yellow fever which up to that time had ever been known.

The conflicting acts of different State and municipal authorities in the adoption and enforcement of measures for preventing the importation and spread of yellow fever had excited much comment; the fever was believed to be imported, and existing quarantines were regarded as inefficient, owing to a want of power on the part of the States to enforce their regulations.

Two questions were raised in Congress:

1. Should not the establishment and management of quarantine be exclusively the duty of the General Government under the provision of the Constitution empowering Congress "to regulate commerce?"

2. Is not quarantine a police regulation of the State or Municipal and hence quite outside of the provisions of the constitution?

From the annals of the Congress of the United States, it appears that on the twenty-eighth of April, 1796, Hon. Samuel Smith, of Maryland, proposed a resolution to the following effect, which was referred to the Committee of Commerce and Manufactures to report thereon:

Resolved, "That the President of the United States be authorized to direct such quarantine to be performed on all vessels from foreign countries arriving at the ports of the United States as he shall judge necessary."

This measure proposed by the honorable representative from Maryland was designed to place the quarantine system of the United States under the direction of the President, who at that time was General George Washington.

The Committee on Commerce and Manufactures consisted of the following members:

Goodhue, of Massachusetts.
Bourne, of Rhode Island.
Livingston, of New York.
Swanwick, of Pennsylvania.
Smith, of Maryland.
Parker, of Virginia.
Smith, of South Carolina.

May 7, 1796, the committee reported a bill to regulate quarantine, which was read twice and referred to the Committee of the Whole.

It was as follows:

"*Be it enacted, etc.* The President of the United States, be, and is hereby authorized to direct at what place or station, in the vicinity of the respective ports of entry within the United States, and for what duration and particular periods of time, vessels arriving from foreign ports and places shall be directed to perform quarantine.

..*Be it enacted, etc.*, That the President of the United States be and is reby authorized to direct the revenue officers, and the officers commanding rts, and revenue cutters, to aid in the execution of quarantine, and also e execution of the health laws of the States respectively, in such manner may to him appear necessary."

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n May 11, 1796, on motion of Mr. S. Smith, of Maryland, the House resolved itself o a Committee of the Whole on the bill regulating quarantine.

Ir. Heister, of Pennsylvania, objected to the principle of the bill, as it proposed to o power from individual States to regulate what respected the health of their citizens, l to place it in the President of the United States. He thought the measure would be ended with very great inconvenience. Many States lay very distant from the seat of ernment, and before information could be given to the President of the apprehension any pestilence being introduced, and his answer received, the disease might be intro- ed into the country and great havoc made among the citizens. It appeared to him t the Governor of each individual State was better calculated to regulate quarantine n the General Government, because upon the spot. And if the power was to be nsferred from the President to the collectors at each port (that he conceived must be case), it would put a vast deal too much power in their hands.

Ir. Smith, of Maryland, said that each individual State might have its own health s, but the performance of quarantine was in the direction of the General Government. e President of the United States ought to be empowered to designate the place where sels should perform quarantine, to enforce the performance, and to determine at what e of the year it should commence and end. He denied that there was any authority he State Governments to regulate quarantine. They could not command the officer port to use force to prevent a vessel entering their ports; the authority over him s in the General Government.

Ir. Kittera, of Pennsylvania, understood that each independent State had a right to islate on this subject for itself. He believed that each State understood its own con- us better than the General Government, and therefore the regulation might safely be with them.

Ir. Milledge, of Georgia, opposed the bill. He said that the State from which he came s in the habit of regulating quarantine, and that it would be attended with many onveniences if the power was to be placed in the General Government.

Ir. Giles, of Virginia, said that self-preservation justified every State in taking means prevent the introduction of diseases among its citizens, and he thought the bill ecessary.

Ir. Smith, of South Carolina, said the Constitution did not give to the State Govern- nts the power of stopping vessels from coming into their ports.

ay 12, 1796: Mr. Heister, of Pennsylvania, moved to strike out the first section. It eared to him as if it would be taking the power of regulating quarantine from the te Governments and placing it in the hands of the Collectors of the different ports; l as he believed the Collectors were interested in proportion to the quantity of goods orted, the health of our citizens and the interest of the Collectors would be placed in osition to each other.

Ir. Swanwick, of Pennsylvania, said if the section were stricken out the bill would e every desirable effect. All that was complained of was, that the authority of any ividual State could not compel vessels to perform quarantine; but if the President e directions to the officers of the United States at every port to aid the State Govern- nts in this respect, every effect would be obtained. The first section of the bill was y to direct the time during which quarantine should be performed, and at what par- ular place, which would certainly be best determined by the State Governments. eed, most of them having already fixed on places for the purpose, and erected suitable ldings for the sick, for purifying goods, etc., it would be attended with very great onvenience if a different place were to be fixed upon by the United States. It was l that the right of regulating quarantine did not reside in the State Government. He ieved it did, and that the individual States had conceived so, was evident from the pense which some of them had been at in erecting buildings, etc., for the purpose. He ticularly alluded to the provisions made for this purpose by Pennsylvania, on the laware.

Ir. Bourne, of Rhode Island, opposed the motion; and Mr. Sitgreaves, of Pennsylva- , in like manner held that the strongest and best reason for a law such as the one pro- ed is that it is matter of very serious doubt whether, upon this subject, the States had authority at all, and whether all such power is not vested by the Constitution in the gress, under their general authority to regulate commerce and navigation.

Mr. Milledge, of Georgia, favored the striking out of the first section, and advocated the view that the power of regulating quarantine rested with the State Governments. Savannah, in Georgia, he said, was one thousand miles from the seat of government, and from their situation in respect to the West Indies, they were very subject to the evil of vessels coming in from thence with diseases; and if they were to wait until information could be given to the President of their wish to have quarantine performed, and an answer received, the greatest ravages might in the meantime take place from pestilential diseases. The State of Georgia had a long law on the subject, and had always been in the habit of regulating quarantine without consulting the General Government. * * *

Mr. W. Lyman, of Massachusetts, thought the individual States had the sole control over the regulation of quarantine. It was by no means a commercial regulation, but a regulation which respected the health of our fellow citizens. In the town of Boston the small-pox was considered a pestilential disease, and they certainly had a right to make their regulations accordingly. He knew the United States could prohibit the importation of goods, but he did not think it was in the power of the United States to prevent the landing of persons. He believed the bill was unnecessary; that individual States had a right to make such regulations as were necessary for the health of their citizens. * * *

Mr. Gallatin, of Pennsylvania, said he did not agree in the least with the gentleman from Maryland (Mr. Smith), that the power of regulating quarantine was exclusively in the United States. He conceived the only clause in the Constitution which could at all countenance such an idea, was the article relative to commerce, but, he said, the regulation of commerce had nothing to do with quarantine. It was a regulation of internal police. It was to preserve the health of a certain place, by preventing the introduction of pestilential diseases, by preventing persons coming from countries where they were prevalent, whether such person came by land or by water, whether for commerce or for pleasure, was of no importance—they were all matters of police. The individual States had thought themselves competent to prevent the introduction of slaves coming by sea, although that also might be called a commercial regulation, which they had no right to interfere with. And if a vessel belonging to the gentleman from Maryland was to come to the ports of Baltimore or Philadelphia, with a cargo of negroes, he believed that the government of either place would be equal to the preventing of him from landing and disposing of them, although he would say it was an article of commerce. The State Governments had also something to do with the internal regulations of their ports. The port of Philadelphia was under the direction of wardens and of State laws. He had no objection to the United States assisting the individual States in enforcing their quarantine regulations, but he had an objection to their insisting that they had the sole right of making regulations on that head, or of making health laws for the individual States. He knew that where the Legislatures of the different States had legislated on the subject they had thought it an important branch of their duty. * * * *

Mr. Lyman, of Massachusetts, observed that the gentleman from Maryland (Mr. Smith) did not make the proper distinction. Quarantine was not a commercial regulation; it was a regulation for the preservation of health. If commerce was incidentally affected, it ought so to be, when the object was the preservation of health and life. The United States, it was true, could prevent the importation of any goods, whether infected or not, but it did not thence follow that they could permit the landing of infectious goods, contrary to the laws of any State.

The several States possessed the sole power over this subject. They were the best judges of the due exercise of it. The right to preserve health and life was inalienable. The bill was not only unnecessary and improper, but it was injudicious interference with the internal police of the States; neither would the amendments, which had been offered by the gentleman from Connecticut (Mr. Hillhouse) ameliorate the bill; it would be interfering with State policy. If that gentleman had any panics about infectious diseases, he might find relief in the laws of the State. If the laws there were incompetent thereto at present, the gentleman might remonstrate to the Legislature, who no doubt could exist but he would be suitably listened to. As to the argument that States neglected to make regulations, it proved that they supposed them superfluous. Whilst they forbear to do anything, it was proof that nothing ought to be done.

The States are the best judges and had the sole power to determine.

Mr. Giles, of Virginia, said he did not know which States had legislated on this subject, and which had not. He did not know that any of the States had not legislated upon it; but if they had not done it they could do it. The gentleman from Maryland (Mr. Smith) had said, to regulate quarantine was a commercial regulation. They were legislating not upon commerce, but upon preventing the introduction of pestilential diseases. Were these objects of commerce? If a State stops a ship she does not stop on account of the goods it contains, but because it contains an infectious disorder, which if it were considered as an article of commerce certainly ought, at least, to be a contraband article. * *

[r. Swanwick, of Pennsylvania, said: Commercial regulations were placed in the Gen- l Government to prevent one State having advantages over another in respect to mmerce; but with respect to health every State was certainly the best judge, and the m was imperious; and if they were under the power of the General Government, and ernment was to neglect to take the necessary measures, the State would itself take m. * * *

he governments of New York and Pennsylvania were in the constant habit of pre- ting ships from entering their ports until they had been examined with respect to ir healthfulness.

he State of Pennsylvania had been at great expense in erecting necessary buildings the reception of persons and goods infected with diseases. It was to be lamented t gentleman had not before found out that this was the business of the General Gov- ment, for it had been a very expensive undertaking for the State of Pennsylvania to vide the necessary buildings for carrying their quarantine and health laws into exe- on, and they would gladly have turned it over to the United States.

e thought the utility of the business remaining in the State Government was evident. It was certainly of first consequence to guard the health of their citizens by every sible means. He said at this port they had laws respecting wardens; there were also he different States inspection laws, which in some degree affected commerce, but were the kind of regulations prohibited by the Constitution; these did not interfere with rights of Congress to regulate commerce.

r. Holland, of North Carolina, said that in an inquiry into the subject whether the eral Government or State Legislatures were the best judges of the measures necessary e taken for the preservation of the health of the several States, it would occur that extent of the country being so great it would be difficult to say what regulation ld be best suited to all the parts of the Union, for what would be salutary and proper ne might be improper for another. From this circumstance it would seem that each e should have the power to pass its own laws on this head, and, if so, the first clause ld be struck out; to preserve one's health was an article of self-defense. Every ividual should take his own measures to preserve his own health, and each State ld judge of the best way of doing it for its own districts. The Constitution being t in respect to health laws, he supposed the passing of them was left to the States selves. Those who yet have no laws on this subject will make them when neces- . The question, in his opinion, was by no means a commercial one. The gentleman Maryland, being a commercial man, may be excused from considering it as one, as adily converts most things into a commercial view.

r. Brent, of Virginia, was in favor of striking out the first clause of the bill under ideration, not from any jealousy of the Executive, but because the Constitution did uthorize such an interference. If the doctrines of the gentleman from Maryland e true, they would swallow up all the authority of the State Governments. They suggested that if the State Legislatures had the power they might use it so as to re the General Government. He would ask whether this would prove that they did possess the power? If they possessed the power and exercised it so as to injure the ests of the United States, the Constitution of the Union, he believed, would point a remedy. The gentleman from South Carolina had said that if the State Govern- ts were possessed of this power they might impair the revenue of the United States, that, therefore, being connected with commerce, the regulating of quarantine must the power of the General Government. He would ask whether the different States not the power of regulating the inoculation for the small-pox? Yet this might be dered as to affect the trade and commerce of this country, and yet no one would say they had not the power of doing this. If the construction now contended for was ed to its extent, there would be no bounds to it. The States had always been con- ed as possessing the power of regulating quarantine. Such was the opinion at the of the adoption of the Constitution, and under that impression the States had ed laws on the subject; nor did he believe that necessity, expediency or policy ired that the power should be changed. If this was the case, the question could be brought forward for the purpose of establishing a constitutional principle, and h he should certainly oppose.

e question for striking out the first section was put and carried—46 to 23—and the was ordered to be engrossed for a third reading.

iday, May 23, 1796, the bill relative to quarantine was read a third time and d.

the Senate, Tuesday, May 24, 1796, Mr. Rutherford, of New Jersey, from the com- ee to whom was referred the bill sent from the House of Representatives for concur- , entitled "An act relative to quarantine," reported that the bill be amended by ting after the word "that," "until general regulations relative to quarantine are by law." And on the question to agree to the report, it was determined in the tive.

ednesday, May 25, the bill was read a third time and passed.

pproved May 27, 1796.

It will thus be seen from the preceding record of the debate on quarantine in 1796, that the Members of Congress who took part in the first discussion after the formation of the Federal Union, concerning the relations of the General and State Governments in the establishment and administration of maritime quarantine arrived at the following results:

(a). Quarantine regulations related to the preservation of the health and lives of the people, and were based upon the evident and inalienable right of *self preservation.* The duty of each State to protect its citizens from the importation of foreign pestilence was clear and imperative.

(b). The power to establish and enforce quarantine regulations had been exercised by the individual Colonies, and had never been surrendered to the General Government.

(c). The establishment and enforcement of quarantine by the individual States, was not a *regulation of commerce*, in *violation* of the provisions of the Federal Constitution; but it was simply the exercise of those police powers by the individual States, which were inalienable, and which had not and could not be surrendered to the General Government.

(d.) The representatives who had themselves been active in the achievement of the independence of the United States, and who were familiar with the exalted pariotism and great services of General George Washington, were not willing to place the right of quarantine in the hands of the General Government, and invest the first President of the United States, "with authority to direct at what place or station in the vicinity of the respective ports of entry within the United States, and for what duration and particular periods of time, vessels arriving from foreign ports and places may be directed to perform quarantine."

(e). The outcome of the entire discussion, conducted by Smith, of Maryland, Goodhue, of Massachusetts, Bourne, of Rhode Island, Livingston, of New York, Swanwick, of Pennsylvania, Parker, of Virginia, Smith, of South Carolina, Heister, of Pennsylvania, Kittera, of Pennsylvania, Milledge, of Georgia, Giles, of Virginia, Sitgreaves, of Pennsylvania, Williams, of New York, W. Lyman, of Massachusetts, Hillhouse, of Connecticut, Gallatin of Pennsylvania, Page, of Virginia, Holland, of North Carolina, and Brent, of Virginia, was to affirm the right of the individual States to establish quarantine, and to direct the President of the United States to sustain and protect them in the exercise of such rights.

This is clearly set forth in that portion of the original bill reported by the committee, which was passed by the House of Representatives and Senate, and approved May 27, 1796.

"*Be it enacted, etc.*, That the President of the United States be, and is hereby authorized to direct the revenue officers and the officers commanding forts and revenue cutters, to aid in the execution of quarantine, and also the execution of the health laws of the States respectively, in such manner as may to him appear necessary."

On the twenty-first of December, 1790, a committee composed of Messrs. Lawrence, of New York; Seney, of Maryland; Fitzsimmons, of Pennsylvania; Vining, of Delaware, and Goodhue, of Massachusetts, was appointed to bring in a bill to establish health officers in the principal ports of the Union. This committee did not make a report, and the true nature and intention of the motion appears to have been suggested by the petition of the merchants and other inhabitants of Baltimore, presented on the

inth of December, 1790, "praying that a health officer may be established other provision made by law, for protecting them from infectious and idemical diseases brought by passengers and others arriving from for- n countries."

Congress, on the ninth of June, 1794, approved the act of the Legisla- e of Maryland, levying a duty on vessels, to pay the expenses of its lth officer and quarantine establishment.

The action of Congress in regard to the port of Baltimore is as follows: *n act declaring the consent of Congress to an act of the Legislature of Mary- l passed December* 28, 1793, *and approved June* 9, 1794.

e it enacted, etc., That the consent of Congress be, and is hereby nted and declared to the operation of an act of the General Assembly Maryland, passed the twenty-eighth of December, 1793, entitled "An a to appoint a health officer for the port of Baltimore, in Baltimore nty," so far as to enable the State to collect a duty of one cent per ton ll vessels coming into the district of Baltimore from a foreign voyage, the purpose of the said act intended.

ec. 2. *And be it further enacted*, That this act shall continue in force to end of the present session of Congress, and no longer.

his act was subsequently repealed.

notwithstanding that yellow fever again prevailed during the summer of and 1797, and increased the public alarm by the extension of its area the fatality of its attacks; and notwithstanding that during the sum- of 1798 yellow fever again appeared and attained the proportions of a onal scourge, prevailing in Portsmouth, N. H., Boston and Salem, Mass.; sterly, R. I.; Hartford, Stonington, New London and Norwalk, Conn.; York; Bridgeton and Worlbury, N. J.; Philadelphia, Marcus Hook and ster, Pa.; Wilmington, Christina, Dark Creek and New Castle, Del.; imore, Md.; Norfolk, Petersburg and City Point, Va.; Charleston, S. evertheless Congress reaffirmed the rights of the States to establish and ntain local quarantines.

resident John Adams, in his address to the two houses at the opening e Third Session of the Fifth Congress, December 8, 1798, thus refers ellow fever, and the measures for its exclusion:

But when we reflect that this fated disorder has within a few years e repeated ravages in some of our principal seaports, and with in- sed malignity, and when we consider the magnitude of the evils aris- from the interruption of public and private business, whereby the na- l interests are deeply affected, I think it my duty to invite the legis- e of the Union to examine the expediency of establishing suitable lations in aid of the health laws of the respective States, for, these g formed on the idea that contagious sickness may be communicated ugh the channels of commerce, there seems to be a necessity that, Con- s, who alone can regulate trade, should frame a system which, while it tend to preserve the general health, may be compatible with the in- st of commerce and the safety of the Union."

Wednesday, January 23, 1799, Mr. Smith, of Maryland, Chairman of Committee of Commerce, reported a bill respecting quarantine and h laws, which was read and committed.

Monday, January 28, 1799, on motion of Mr. Smith, of Maryland, House went into a Committee of the Whole, on the bill respecting antine and health laws; Mr. Rutledge in the chair.

e bill was read as follows:

SECTION 1. *Be it enacted, etc.* That the quarantine and other restraints which shall be required and established by the health laws of any State or pursuant thereto, respecting any vessel arriving in, or bound to any port or district thereof, whether from a foreign port or place, or from another district of the United States, shall be duly observed by the Collectors and all other officers of revenue of the United States, appointed and employed for the several collection districts of such States respectively, and by the masters and crews of the several revenue cutters, and by the military officers who shall command in any port or station upon the sea coast; and all such officers of the United States shall be, and they are hereby authorized and required faithfully to aid in the execution of such quarantine and health laws, according to their respective powers and precincts, and as they shall be directed from time to time by the Secretary of the Treasury. And the said Secretary shall be and is hereby authorized when a conformity to such quarantine and health laws shall require it, and in respect to vessels which shall be subjected thereto, to prolong the term limited for the entry of the same, and the report and entry of their cargoes, and to vary or dispense with any other regulations applicable to such reports or entries; *provided*, that nothing herein shall enable any State to collect duty of tonnage or impost without the consent of the Congress of the United States; and *provided*, that no part of the cargo of any vessel shall, in any case, be taken out or unladen therefrom otherwise than as by law is allowed, or according to regulations hereinafter established.

Sec. 2. *And be it further enacted*, That when by the health laws of any State, or by the regulations which shall be made pursuant thereto, any vessel arriving within a collection district of such State shall be prohibited from coming to the port of entry or delivering by law established for such district, and it shall be required by such health laws that the cargo of such vessel shall, or may be, unladen at some other place within or near to such district, the Collector authorized therein, after due report to him of the whole of such cargo, may grant his special warrant or permit for the unloading and discharge thereof under the care of the surgeon, or of one or more inspectors at some other place where such health laws shall permit, and upon the conditions and restrictions which shall be directed by the Secretary of the Treasury, or which such Collector may for the time reasonably judge expedient for the security of the public revenue; *provided*, that in every such case all of the articles of the cargo so to be unladen shall be deposited at the risk of the parties concerned therein in such public or other warehouses or enclosures as the Collectors shall designate, there to remain under the joint custody of such Collector, or of the owner or owners, master or other person having charge of such vessel, until the same shall be entirely unladen or discharged, and until the goods, wares or merchandise which shall be so deposited may be safely removed without contravening such health laws; and when such removal may be allowed, the Collector having charge of such goods, wares or merchandise may grant permits to the respective owners or consignees, their factors or agents, to receive the goods, wares or merchandise which shall be entered, and whereof the duties accruing shall be paid or secured according to law upon the payment to them of a reasonable rate of storage, which shall be fixed by the Secretary of the Treasury for all public warehouses and enclosures.

"Sec. 3. *And be it further enacted*, That there shall be purchased or erected under the orders and with the approbation of the United States, suitable warehouses, with wharves and inclosures, where goods and merchandise may be unladen and deposited from any vessel which shall be subject

rantine or other restraint, pursuant to the health laws of any State, as resaid, at such convenient place or places therein as the safety of the lic revenue and the observance of such health laws may require; *pro-d*, that the sites of all such warehouses and wharves, with such other ining lands as may be necessary for the public uses hereby authorized, ll be ceded to the United States by the State wherein the same may be.

Sec. 4. *And be it further enacted*, That when, by prevalence of any con-ous or epidemical disease in or near the place by law established as the of entry for any collection district, it shall become dangerous or incon-ent for the Collector and other officers of the revenue employed therein ntinue the discharge of their respective offices at such port, the Secre-, or in his absence the Comptroller of the Treasury of the United States, direct and authorize the removal of the Collector and the other officers loyed in his department from such port to any other more convenient e within, or as near as may be to, such collection district, where such ector and officers may exercise the same authorities, and shall be liable e same duties, according to existing circumstances, as in such lawful or district; and of such removal public notice shall be given as soon ay be."

motion of Mr. Sewall, of Massachusetts, the following section was d, repealing a law of the first session of the Fourth Congress respect-quarantine:

ec. 5. *And be it further enacted*, That the act entitled 'An act relative arantine,' passed in the first session of the Fourth Congress of the ed States, shall be, and the same is hereby, repealed."

nuary 29, 1799, the bill was read a third time and passed.

the Senate an additional section was added, permitting the Chief ice or the senior Associate Justice to adjourn the Supreme Court in ase of the prevalence of a contagious sickness in the District of Colum-Similar power was conferred upon the judges of the District and it Courts.

is amendment was concurred in by the House, and the bill, as amended, passed.

e bill was approved February 25, 1799.

om the preceding facts and records from the Journal of Congress, it is nt:

After the adoption of the Constitution, Congress held that the indi-l States had not divested themselves of the power to establish and e their own health, quarantine and police laws and regulations.

The acts of Congress passed in 1796 and 1799 not only recognized the r of the individual States to make their own health and quarantine but they commanded the civil and military officers of the General rnment to conform to and *assist in the execution* of the health and quar-e laws of each and every State.

The men who were participants in the struggle for Colonial indepen-, and who framed the Constitution of the United States, assembled in ederal Congress, solemnly declared, by their organic acts, that the h and quarantine laws of the individual States were *constitutional.*

til the present controversy in Louisiana and Texas, originated by an & Co., the constitutionality of the health and quarantine laws of ndividual States had never been denied by any court of justice in this

4. Congress clearly indicated by the acts of 1796 and 1799 that health and quarantine laws were not in the nature of regulations of commerce, and did not violate the provisions of the constitution, but were essentially in their essence police regulations, based upon the indestructible and inalienable right of self-preservation.

(*d*) *The fees collected by the State of Louisiana from vessels subjected to the quarantine laws are not of the nature of a tax or impost on commerce, but are just and necessary compensation for the great services rendered to commerce in the cleansing and disinfecting of the ships and cargo, in the care and treatment of the sick, by the medical officers of the State, and by the exclusion of foreign pestilence, and by the establishment of public confidence and the maintenance of commerce, which, but for said quarantine service, would be greatly damaged.*

This proposition is in direct antagonism with the recent decision of Judge F. A. Monroe, in the case of Morgan's Louisiana and Texas Railroad and Steamship Company vs. the Board of Health of the State of Louisiana, No 7001, Civil District Court, Division C.; in fact the learned Judge appeared to hold that no service whatever has been rendered by the State of Louisiana in maintaining its quarantine system of inspection, disinfection, cleansing and medical care of vessels, during *the past quarter of a century.**

Judge F. A. Monroe, reasoned and decided as follows:

"It was also found upon the adoption of the Constitution that there was in force i every State a system for the regulation of pilotage which system was adopted by Con gress by act of August 7, 1780, and given the same validity as if the provisions had bee specially enacted by Congress. If, therefore, any duty of tonnage for pilotage or ha pilotage is collected, such collection is made with the consent of Congress.

Again, in many ports, wharves have been constructed either by private or municip enterprise, and all vessels landing at such wharves are charged a certain amount—eith so much per ton, or a fixed sum for vessels of a particular description—for the use of t wharves and the peculiar artificial facilities afforded by them, upon precisely the sa principle that charges are made by the proprietors of dry-docks for accommodations vessels, except that the charge of wharfage upon the banks of navigable streams ca not exceed a reasonable compensation.

So, in the case of port wardens, if the master of a vessel permits them to render service to his vessel, the port warden is entitled to his compensation. But I think it t correct principle, as stated by the learned counsel for plaintiff in his brief, that a charge imposed by the State upon a vessel engaged in commerce, for which no equi lent is given, is a duty of tonnage, whether such charge be measured for the tonnage the vessel or imposed as a fixed sum upon all vessels of a particular character. And, yond this, I am satisfied that the States have no authority to impose upon ves services which are neither needed, nor desired, and exact payment therefor of sums fi by the States themselves.

In the case at bar, for instance, it appears from the testimony that the fumigation vessel for the purposes of disinfection destroys more or less of the roaches and ot vermin by which ships are sometimes infected and it may be said that the destructio such vermin is advantageous to the ship, but it would be difficult to demonstrate u what principle of law or common sense the State of Louisiana should be permit against the wishes of the owner, but at his expense, even to destroy vermin on vessel, unless in furtherance of some police or health regulation; but the very bas the power which the States possess, to adopt and enforce such regulation is the inhe and inalienable rights of self protection. And the basis of the argument of the def in this case is that the State has exercised the power to establish quarantine for the tection of her citizens; neither the power, therefore, nor the manner of the exerci this case, affords the shadow of a pretext for the claim that vessels quarantined ag the wishes of the owner, are hereby rendered a service for which a sum of money trarily fixed by the State, may be exacted.

*The act under which the present and preceding Boards of Health have conducted a system of quara and collected fees for the liquidation of the expenses necessarily incurred in the discharge of duti services, designed, on the one hand, to purge ships of infected diseases, and to render the crews and ca inocuous, and on the other to exclude foreign pestilence from the State, was enacted by the General A bly in 1855; and it was not until 1874, nearly twenty years after the inauguration of the present syst quarantine, that Morgan and others enjoined the Board of Health from collecting quarantine fees.

The point upon which counsel for defendant appears to place most reliance, is that the arges which are here objected to are not duties of tonnage, because they are not propor oned to the tonnage of the vessels taxed, but are fixed with reference to the class or aracter of the vessels.

If, as we have seen, no service is rendered to the vessel, there exists no basis for the arge, whether it be a duty of tonnage or not; but the proposition that a steamship of 00 tons can be forced to pay $30 toward the support of our health and quarantine sys- m, provided the charge is imposed without the use of the word tonnage, and yet that thing could be collected for so excellent a purpose if the charge is imposed at the rate one cent per ton, it seems to me is disrespectful to the Constitution of the United ates.

The same point has, however, been suggested before, and was thus disposed of by ief Justice Chase. "It was not only a pro rata tax which was prohibited, but any ty on the ship, whether a fixed sum upon its whole tonnage or a sum to be ascertained comparing the amount of tonnage with the rate of duty:" 6 Wallace, 33.

n this same case, in referring to the question of the right of the port warden to col- t fees without the rendition of specific services, upon the theory that it was an advan- e to commerce that such officers should be at hand, the court said:

"It may be true that the existence of such a body of men is beneficial to commerce, t the same is true of the government of the State, of the city government, of the urts, of the whole body of public functionaries. If the constitutionality of the arge for the benefit of the master and wardens can be maintained upon the ground that ecures compensation for services, it is difficult to perceive upon what ground the consti- ionality of any State law imposing taxes for the benefit of the State government, n vessels landing at its ports can be questioned." 6 Wall, 33. See also 12 Wall, 218; Wall, 580; 31 Ann., p. 65; 34 Ann., 703.

An intervention was filed in this suit by the Attorney General, on behalf of the State, which it is alleged that the plaintiff is seeking to have annulled laws "whereby enues are raised and provided for the maintenance and support of the quarantine tem and service of said State for the prevention of the introduction of contagious infectious diseases into the State of Louisiana," etc., all of which is undoubtedly e, and exhibits sufficient interest on the part of the State to justify the intervention. t also serves to illustrate more clearly the conflict between the laws referred to and Constitution of the United States, since it is thus judicially admitted and averred by State of Louisiana that she derives a revenue by the imposition of charges upon all sels entering the mouth of the Mississippi river, wherewith she supports her quaran- system and service, while the laws themselves, and the evidence in this case, show t the damages are imposed with the sole purpose of raising this revenue and without ering, or the intention to render, any service whatever to the ships charged.

hat the quarantine service is ably and intelligently conducted there can be no doubt, this affords no reason for requiring that it should be supported by those who are er no legal obligations so to do.

or these reasons, deeming it unnecessary to consider other points raised, I am of ion that the injunction herein issued should be maintained and perpetuated at the of defendant and the intervention dismissed.

essrs. Leovy & Krutschnitt, counsel for plaintiff. Frank C. Zacharie for defendant.

In opposition to the above decision, we have the following well-established principles of the fundamental laws of quarantine, recognized by all ilized nations:*

a) Quarantine is established and recognized by international law, for common security and protection of States against diseases which are pposed to be importable.

b) Although the chief source of the intercourse of States is the inter- nge of commodities of natural or artificial production, and although h mutual exchange is, as a rule, reciprocally advantageous to both na- s—and it may even be held that it is the moral duty of a nation not to se commerce with another nation—yet this duty always pre-supposes safeguard that such commerce is not hurtful to the nation which im- ts. It belongs to each nation to judge for itself in this matter, and in a e of emergency a nation is not only not bound to sell its superfluities or ds to any other nation, but still less is it bound to purchase from it, or

* "The Laws Relating to Quarantine of Her Majesty's Dominions, at Home and Abroad, and of the cipal Foreign States," by Sir Sherston Baker, Bart. London: 1879.

exchange with it, productions either of nature or of art. Neither is there any legal right in a State to compel another State to admit its inhabitants, or to receive its commodities, however great may be the inducements to maintain such intercourse or traffic. But when such an intercourse or exchange is permitted, the foreign State, in the disposal of the commodities allowed to be imported by law, is subject to such duties and restrictions as the government of the receiving State may judge necessary or expedient to impose for the benefit of its subjects.

(c) Although it is contrary to sound policy for a nation to impose quarantine merely for the purpose of providing a revenue to the country in which it is established, this is not to be understood of certain dues or duties which are imposed on ships entering the ports of a State for the legitimate purpose of maintaining the quarantine or sanitary establishments of a country.—Sir Sherston Baker.

Quarantine restrictions prevent non-intercourse, and afford a form or gateway through which the commodities of all nations may pass after proper inspection, detention and disinfection; therefore, a service is rendered to ships and to commerce, and, therefore, the dues or duties imposed on ships entering the ports of a State for the legitimate purpose of maintaining quarantine and sanitary establishments are just, and are recognized and sanctioned by *international law.*

Numerous examples might be cited of the exercise of forcible protection against contagion, but the following will illustrate the mode in which States have dealt with infected ships and towns:

In 1748 the Adam, a Dutch ship, carrying rice from Damietta to Marseilles, was cast on the shore of the island of Majorca by a tempest. The inhabitants (Spaniards) refused to permit the crew to land, as they feared the plague, from the fact of the ship sailing from the Levant. As the ship could not be removed, the Spaniards set her on fire, having previously furnished the crew with five boats, in which to save themselves and part of the cargo.

In 1719 the captain of the Grand Saint Antoine, a French ship, returning to Marseilles from the Levant, and having lost some of his crew from the plague, fraudulently pretended that they had died of bad provisions, and neglected to go into quarantine. This cruel fraud was the cause of the death of half the inhabitants of the city. By order of the Minister, the vessel was burnt.

When Valetta was attacked by the plague, in 1813, Sir Thomas Maitland ordered a *cordon sanitaire* to be drawn round the town, and every person who attempted to pass it to be shot.

The 45 Geo. III., c. 10 (which repealed former acts of the same enactments), the 46 Geo. III., c. 98, the 50 Geo. III., c. 20, and the 51 Geo. III., c. 46, rendered all ships, including ships of war, which came from or which had touched at any place from whence the King, by order in council had adjudged it probable that the plague or any other infectious disease might be brought, subject to quarantine. The penalty of felony, without benefit of clergy, was imposed on disobedience of persons under quarantine and on those also who, although not infected, should, after entering any place of quarantine, escape therefrom.

During the present century the British Government imposed duties upon ships for the support of quarantine.

Thus, in the year 1800, the project of erecting a lazarette on Chetney Hill, in the county of Kent, was adopted, and by an act of Parliament (42 Geo. III., c. 80, and subsequent acts) large sums of money were granted for the purpose of carrying it into effect.

To meet the expense of the building at Chetney Hill, certain duties were merly imposed upon all ships coming from the Mediterranean, and to same ships various regulations, contained in the quarantine laws, were plied, with a power of extending by a special act of the government, the rations of it to vessels coming from any other part of the world.

The right of States to impose quarantine charges for the support of quarine has been fully recognized by civilized nations; and was officially nciated by international sanitary and quarantine conventions.

Thus, in the convention made in Paris, February 3, 1852, between France, linia, Portugal, Turkey and Tuscany, the high contracting parties oted the following, with reference to sanitary dues:

VII. To arrive, as far as possible, to a uniformity in the sanitary laws, not to impose on the shipping of the respective States, more than the ges required to cover the necessary expenses, the high contracting ies, under the limitation of the exceptions foreseen by the international tary regulations, decree in principle—

That all the ships in a port shall pay, without distinction of flag, cer- dues for sanitary purposes, in proportion to their tonnage.

That ships subject to quarantine shall pay besides daily dues for their ts.

That the persons who stay in the lazarette shall pay fixed dues for day's residence in these establishments.

That merchandise placed and disinfected in the lazarettes shall be ect to a tax according to weight or value.

e dues and taxes mentioned in the present article shall be fixed by government, and signified to the other contracting parties."

e quarantine system of Louisiana, as it now exists, and with the quare charges established in 1855, was, as far as the essential principles ved, the same as the systems of France, Sardinia, Portugal, Turkey Tuscany and other European powers.

vessel in quarantine is still theoretically in transitu, and there being no nts of voluntary sacrifice, her charter is not violated.

cording to international law, a vessel in quarantine is still theoreti- *in transitu*, and if the agent or consignee gives notice and claims the during such period, there is sufficient stoppage of the goods to prevent esting in the assignees of the consignee, if he should become bankrupt, although one of the assignees had already boarded the vessel and possession of, but not removed the cargo.

ship be necessarily detained on her voyage by quarantine, there is ement of a voluntary sacrifice, and the weight of American authority ainst any claim for contributions for wages and provisions, or other nses caused by such detention.

arantine facilitates commerce in that it furnishes the only legal certificate grants to vessels, subject by international law to quarantine, "liberty to d."

ratique" is what a vessel receives when she has liberty to unload ut impediment from laws of quarantine.

ere such laws exist, vessels arriving from suspected countries must a certificate to enable them to unload; and this is called being ad- d to *pratique.*

word itself means "liberty to unload."

quarantine system of Louisiana furnishes pratique to all vessels con- ng to the organic acts of the Legislature, and to the laws, rules and ations of the Board of Health.

Were it not for the execution of the quarantine laws by the Board of Health of the State of Louisiana, the port of New Orleans would be hermetically sealed during six months of every year (May-October), and practically all intercourse with surrounding States would be closed, and the "shot-gun" quarantines lining the banks of the Mississippi River would nullify pratique, and effectually destroy both internal and external commerce.

In virtue of its power to grant "*Pratique*" to vessels conforming to the quarantine laws, the Board of Health of the State of Louisiana practically protects and facilitates commerce; and justice demands that this beneficial system of protection should be supported by those who conduct commerce.

The accompanying tables (K and table K continued) furnish accurate data by which to estimate the effects of quarantine as conducted by the Board of Health of the State of Louisiana on the commerce of New Orleans.

The opponents of the quarantine system of Louisiana have continually used the press to arouse public indignation and hatred against the Board of Health, and especially against its President, by the cry that quarantine was destroying the commerce of New Orleans by the subjection of vessels from Mexican, West Indian and certain South American ports to quarantine detention during the months in which yellow fever prevails, namely during May, June, July, August, September and October.

We may from table K and table K continued, presenting a view of the commercial relations of New Orleans 1805-1882, establish the following facts illustrating the great service rendered by quarantine to the commerce of New Orleans.

1. During the ten years, extending from 1805 to 1815 inclusive, the increase of the trade of New Orleans by no means corresponded with that of its population; on the contrary, a large falling off was exhibited even before the commencement of the war of 1812-1815; the close of this war, however, inaugurated a new era in the commercial history of New Orleans, the exports increasing from $387,000 in 1814 to $12,900,000 in 1818. This wonderful advance, however, was checked, and a large falling off was exhibited during the next six or seven years, although the average largely exceeded that of any previous period of ten years.

2. From 1820 up to the commencement of the American civil war (1861-1860 inclusive) the increase of trade and population of New Orleans was remarkable.

3. It is worthy of note that when the quarantine system, which now exists, was established in 1855 the total exports were $55,400,711, and the imports $12,923,608, while four years after, in 1860, the exports reached $108,393,567 and the imports $20,920,849. From 1843 to 1849 inclusive the exports of foreign and domestic merchandise averaged about $40,000,000, the average of the imports from foreign countries was barely $9,000,000 per annum.

The following table will show that the quarantine system of Louisiana, so far from being a burden on commerce, has fostered and promoted it

MERCIAL STATISTICS OF NEW ORLEANS, 1863–1882, INCLUDING THE PERIOD OF THE AMERICAN CIVIL WAR.

YEAR.	Exports.			Imports.
	Domestic.	Foreign.	Total.	
18			$3,397,521	$82,919,000
18	3,600,958	$356,357	3,957,345	1,011,462
18			7,310,022	1,848,657
18			33,393,464	4,458,354
18	77,815,906	863,638	78,679,574	
18	101,385,257			17,705,655
18	93,532,797			18,333,580
18	95,950,942			20,006,777
18	100,960,307			18,285,527
18	87,974,797			13,472,483
18	75,695,700	155.993	75,851,693	11,637,128
18	81,387,836	300,748	81,688,584	9,631,252
18	70,270,593			11,240,900
18	74,366,388	123,608	74,489,991	8,725,751
18	81,105,822	185,598	81,191,420	8,259,606
18	102,528,336	221,031	102,749,367	11,800,977
18	90,206,693	257,551	90,464,244	12,574,647
18	80,759,022	305,731	81,064,753	11,076,833

is evident, from the preceding statistics, that under the direction of the present Board of Health, 1880 to 1883, the commerce of New Orleans has been as great as at any similar period since the close of the civil war, 1861 to 65; and that with the exception of the year 1860, New Orleans actually enjoyed a larger commerce in 1880, during the action of the present quarantine law, than in any other year from her foundation in 1718.

The quarantine was conducted upon the most liberal principles in 1875, 1877 and 1878; and it is precisely in these years that we observe the greatest falling off in the commerce of this port.

All the great sanitary and quarantine measures of the past twenty-seven years in Louisiana, may be directly or indirectly traced to the act "*to establish quarantine for the protection of the State*," approved by P. O. Hebert, Governor of the State of Louisiana, on the fifteenth of March, 1855. During the preceding 155 years of the existence of the Colony, province and State of Louisiana, the sanitary and quarantine efforts of the people were spasmodic, unsatisfactory and of short duration; and as a consequence, at frequent and short intervals, the people were decimated by foreign pestilence, imported by maritime men and immigrants.

The exports of 1880 reached $102,749,367, and the imports $11,800,977; total exports and imports $114,550,344.

The total amounts collected from this vast sum, for the protection of the commerce and trade of New Orleans and the Mississippi Valley, was $72.

Is this paltry sum, barely sufficient to maintain the quarantine establishments guarding the mouths of the Mississippi and over 500 miles of coast, be regarded as a *tax on commerce*—a burden destructive to the growing commerce of New Orleans?

The internal or interstate trade of New Orleans equals annually $200,000,000, exceeding by far the value of the foreign exports and imports.

The preservation of this internal interstate trade depends absolutely upon an efficient quarantine guarding the approaches to the Mississippi Valley from the Gulf of Mexico.

New Orleans will become a great manufacturing centre for cotton, tobacco, jute and sugar, provided that *pestilence* is kept away by a rigid system of quarantine, combined with an equally rigid system of domestic sanitation.

If yellow fever is allowed to enter in May, June or July, this port will be hermetically sealed until the disappearance of yellow fever. During this period of embargo, which may last as long as six months, there will be practically non-intercourse with surrounding States, and all manufactories will be closed, as there will be no possibility of shipping manufactured articles. No system of manufactures, however well ordered, can sustain such periods of inactivity.

These facts relate solely to the mercantile and money view of this question, but the vast suffering and destruction occasioned by the importation of foreign pestilence, through the channels of commerce, is realized when we consider that during the years 1853, 1854 and 1855 New Orleans lost 12,780 of her citizens by yellow fever (an imported pestilence), and still more recently in 1878, she lost 4056 souls, and about $15,000,000.

The State of Louisiana has a right to demand that commerce, which benefit the entire Valley, and derives its richest rewards from the cotton, sugar an grain of these great Southern and Western States, shall pay a sufficient amoun for such a system of inspection, disinfection, quarantine, and medical care o sick seamen and passengers, as will prevent the introduction of foreign pest lence.

IMPORTANT SERVICES RENDERED BY DETENTION, CLEANING AND FUMIGATION.

It has been well established by the experience of the past four hundr years that vessels retain the contagion of yellow fever and other pestile tial diseases because—

1. From their structure it is difficult to introduce a sufficiency of fresh to dilute and drive away the contagious or infectious particles.

2. From the manner of their construction it is exceedingly difficult scrub, or cleanse the interior of vessels, so as effectually to remove contagious or infectious particles.

3. A ship is a human habitation, and the crew, especially when num ous, not only contaminate the stagnant air, but unless kept under the m stringent sanitary supervision, they are prone to become unclean in th persons, clothing and bedding. Upon long voyages, especially in tropi or semi-tropical climates, this uncleanliness of vessel and crew accun lates to a disgusting and dangerous degree, and engenders poisons of infectious and destructive character.

4. A ship is not merely a human dwelling; she is a magazine or st house; within her sides, as in a common storehouse, are collected m sorts of things prone to perish and corrupt. Beef, fish, pork, hides other animal substances frequently taint the hold that contains them w their deleterious vapors; this tendency to putrify is increased by impro curing with inferior quality of salt, and also by the hot, moist climat tropical and semi-tropical regions. The rotting of provisions on shipbo renders the berths and quarters of the men unhealthy, and the crew sick under such mischievous agents. The evil is increased when the crew

liged to feed upon tainted or spoiled meat. Not only animal substances, onions, coffee, Indian corn and various other vegetables which are carl in ships, contribute by their decay to render unhealthy the bottoms in ich they are carried.

rom the corruption of their cargoes, the accumulation of foul bilge water l the uncleanliness of the crew, ships may be filled with a foul, infectious osphere, and the timbers, planks, bedding, and even the cargo, be danously impregnated.

. Ships and vessels, though so prone to become foul and pestilential n their structure, tenants and cargoes, are seldom cleaned in a thorough ner; from the time they are launched to the day of their condemnation or none of them are perfectly purified; year after year the foulness eases, insomuch that old ships and vessels are usually the most nasty loathsome of human habitations, and frequently carry pestilence to all s of the world.

he disastrous results have at all times been the same, whether the ship ived the infection in an infected port, or engendered the infection in her bowels from the causes just enumerated.

The negligence of navigators and owners of vessels with reference to health, comfort and cleanliness of the crew, and the condition of the els, render it imperative that the commerce of the country, as well as happiness and security of her citizens, should be protected by such ic State authority as will secure absolute cleanliness of crew, passengo, cargo and vessel. It is well known that bills of health are often eless and deceitful, in that they fail to give a correct idea of the con n and history of the vessel. If a clean ship sails from a sickly place l bill of health will not really indicate an unfavorable state of health oard, nor prove the crew to be afflicted with the disorder that prevails e port she left; nor will a clean bill indicate that the people in a foul pestilential vessel are in good health, or that she is in a safe or fit ition to be admitted to port.

Quarantine consists not in a mere detention of a certain number of ; but to be efficient it should include a system of thorough cleaning, fection and fumigating of all foul vessels.

e condition of a vessel can only be ascertained by inspection; and the legal authority gives a certificate that a vessel is in good sanitary tion a great good is rendered said vessel, with its officers, crew, pasrs and cargo.

the other hand, when the quarantine officers carefully and thoroughly se, purify and fumigate a foul vessel, a service of the highest value is red to the vessel, with its officers, crew, passengers and cargo. Mere tion, without disinfection and purification, is valueless.

CES RENDERED TO COMMERCE BY THE REMOVAL OF THE SICK FROM THE VESSELS, AND THEIR TREATMENT IN THE QUARANTINE HOSPITALS.

State of Louisiana has at various times appropriated moneys for the on of suitable hospital buildings at the Mississippi Quarantine Station or the treatment of the sick, and the United States Government has ated the needs of commerce by erecting the necessary warehouse for ception, disinfection and fumigation of cargoes.

HISTORY OF THE ERECTION OF THE MISSISSIPPI QUARANTINE STATION.

the thirteenth of March, 1855, the Legislature of Louisiana appro- d the sum of $50,000 for the erection at the quarantine station on the ssippi River of two separate buildings as hospitals for the sick, of a

small house as residence for the officers appointed under the act, and of a well-ventilated store for the reception of the freights of such infected vessels as the resident physician may deem necessary to cause to be unloaded.

By the first section of an act of Congress entitled "An act making appropriation for certain civil expenses of the Government for the year ending the thirtieth of June, 1858," approved third of March, 1857, the sum of $50,000 was appropriated for the construction of warehouses at quarantine station on the Mississippi River below New Orleans.

At the present time, the buildings erected by the State of Louisiana at the Mississippi Quarantine Station are as follows:

1. *Fever Hospital.*—The hospital devoted to the treatment of fevers, and especially yellow fever, is a two-story frame building, 125 feet long, 33 feet wide and 35 feet high, with upper galleries 9 feet wide and 125 feet long, running along the front of the hospital.

This building contains nine rooms on the lower floor and four rooms on the upper—in all thirteen rooms. Halls divide the lower floor at right angles The upper floor is divided into four capacious, well-ventilated wards. The rooms and halls are plastered, and the ventilation is excellent. The entire building is well adapted to the treatment of fever patients.

The cubic capacity of the wards and rooms of the fever hospital is 55,030 cubic feet; of the halls and corridors, 8788 cubic feet—giving a total cubic capacity, exclusive of the galleries, of 63,818 cubic feet.

If 1100 cubic feet of air be allowed to each patient, the hospital is capable of accommodating about sixty patients.

2. *Small pox Hospital*—Is 80 feet in length, 30 feet wide, 24 feet in height two stories, with galleries above and below 80 feet in length, 9 feet in widt and 11 feet high.

Total capacity of Small-pox Hospital, 34,760 cubic feet. If 1100 cub feet of air be allowed to each patient, this hospital would accommoda about thirty patients.

3. *United States Warehouse.*—The Government warehouse is a substanti fire-proof brick building, two stories high, in each of which is a main h and two wings. The two main halls, on the first and second floors, are ea 140 feet in length by 23 feet in width and 12 feet in height, giving a cul capacity of 38,640 cubic feet; total, 77,280 cubic feet. The two wings a each 54 feet in length and 25 feet in width, and 12 feet in height, each flo giving a capacity of 17,200 cubic feet for each wing; total capacity wings, 64,800 cubic feet; total capacity of general warehouse, 142,080 cu feet.

Suitable wharves and warehouses have been constructed by the State Louisiana and the United States.

During the existence of the various Boards of Health from 1855 to present time, the hospital service, with the necessary medicines and s plies, has been maintained at the Mississippi Quarantine Station.

During the year 1880 the Board of Health expended at the Mississi Quarantine Station $14,388 91; at the Atchafalaya, $833 83; at the Ri lets, $1720 17.

During 1880 more than one thousand nine hundred dollars were paid medicines, hospital furniture and disinfectants at the Mississippi Quar tine Station by the Board of Health.

During the year 1881 the expenditures at the State Quarantine Stati were as follows: Mississippi Quarantine, $16,648 87; Atchafalaya Q antine Station, $690; Rigolettes Quarantine Station, $1536 93.

During the year 1881 the Board of Health expended upon the Mississippi arantine Station, for repairs and medical supplies and disinfectants, 86 62.

During the years 1880, 1881, 1882 and 1883 every case of serious sickness been removed to the hospital, and whenever necessary entire crews and ssengers have been vaccinated, free of cost to the suffering.

Are these not services of the highest value to commerce?

GENERAL CONCLUSIONS

RELATING TO THE THEORY AND PRACTICE OF QUARANTINE, AND ITS RELATIONS TO CONSTITUTIONAL AND INTERNATIONAL LAW AND TO COMMERCE.

Quarantine regulations were established in Europe before the discovery of the American Continent, and received the support and recognition of civilized nations, and became engrafted into international law.

The English colonies of North America adopted quarantine regulations long before their separation from the mother country and the achievement of their independence.

All the essential conditions of the quarantine system of Louisiana were firmly established and fully recognized by the organic acts of the British North American Colonies long before the establishment of the American Union.

All the essential questions relating to quarantine, and the relations of the individual States to each other, and to the General Government, were thoroughly discussed shortly after the formation of the Federal Union of the independent Colonies.

The outcome and final results of this discussion of the framers of the Constitution of the United States in the latter part of the last century, and the beginning of the present century, were as follows:

Quarantine regulations related to the preservation of the health and life of the people, and were based upon the evident and inalienable right of self-preservation.

The power to establish quarantine regulations had been exercised by the individual colonies under the Government of England, and had never been surrendered to the General Government.

The establishment and enforcement of quarantine by the individual States was not a regulation of commerce in violation of the provisions of the Federal constitution, but it was simply the exercise of their police powers by the individual States, which were inalienable, and which had not and could not be surrendered to the General Government.

The outcome of the entire discussion in the Congress of the United States with reference to quarantine was to affirm the rights of these individual States to establish quarantine for the exclusion of foreign pestilence and to direct the President of the United States to sustain and protect them in the exercise of said right.

This is clearly set forth in that portion of the original bill reported by the Committee, which was passed by the House and Senate of the United States and approved May 27, 1796, and which still remains to the present day as the law:

"*Be it enacted, etc.*, That the President of the United States be and is hereby authorized to direct the revenue officers and the officers commanding ports and revenue cutters to aid in the execution of quarantine, and also the execution of the health laws of the States respectively, in such manner as may to him appear necessary."

6. The fees collected by the State of Louisiana from vessels subjected to the quarantine laws are not in the nature of a tax or impost on commerce but are a just and necessary compensation for the great service rendered commerce in the cleansing and disinfection of the vessels and cargoes in the care and treatment of the sick by the medical officers of the State, and by the exclusion of foreign pestilence, and by the establishment of public confidence and the maintenance of commerce, which, but for said quarantine services, would be greatly damaged.

This proposition is in direct antagonism with the recent decision of Judge F. A. Monroe in the case of Morgan's Louisiana and Texas Railroad and Steamship Company vs. the Board of Health of the State of Louisiana, No. 7001, Civil District Court, Division C, and in fact, the learned Judge appears to hold that no service whatever has been rendered by the State of Louisiana in maintaining its quarantine system of inspection, disinfection, cleansing and medical care of vessels with their cargoes, crews and passengers during the past quarter of a century.

7. Quarantine is established and recognized by international law for the common security and protection of States against diseases which are supposed to be importable.

8. Although it is contrary to sound policy for a nation to impose quarantine merely for the purpose of providing a revenue to the country in which it is established, this is not to be understood of certain dues or duties which are imposed on ships entering the ports of a State for the legitimate purpose of maintaining quarantine or sanitary establishments of a country.

9. Quarantine restrictions prevent non-intercourse, and afford a formal gateway through which the commodities of all nations may pass after proper inspection, detention, purification and disinfection; therefore a service is rendered to ships and to commerce, and therefore the dues or duties imposed on ships entering the ports of a State for the legitimate purpose of maintaining quarantine and sanitary establishments are just and are recognized and sanctioned by international law.

In the International Quarantine Convention held at Paris, February 1852, between France, Sardinia, Portugal, Turkey and Tuscany, the high contracting parties discussed and adopted in principle:

1. "That all ships in a port shall pay, without distinction of flag, certain dues for sanitary purposes, in proportion to their tonnage.

2. "That ships subject to quarantine shall pay besides, daily dues for their berths.

3. "That the persons who stay in the lazarets shall pay fixed dues for each day's residence in these establishments.

4. That merchandise placed and disinfected in the lazarets, shall be subject to a tax according to weight or value.

"The dues and taxes mentioned in the present articles shall be fixed by each government and signified to the other contracting parties."

10. A vessel in quarantine is still theoretically in transitu, and there being no element of voluntary sacrifice, her charter is not violated.

11. Quarantine facilitates commerce in that it furnishes the only legal certificate which grants to vessels, subject by international law to quarantine, liberty to unload.

The quarantine system of Louisiana furnishes pratique (liberty to unload) to all vessels conforming to the organic acts of the Legislature and the rules and regulations of the Board of Health.

Were it not for the execution of the quarantine laws by the Board of Health of the State of Louisiana, the port of New Orleans would be hermetically closed to commerce during from four to six months every year, and all intercourse with surrounding States would be closed by the shotgun quarantines controlling the river and railroads.

In virtue of its power to grant "*pratique*" to all vessels conforming to the quarantine laws, the Board of Health of the State of Louisiana practically protects and facilitates commerce, and justice demands that this beneficial system of protection should be supported by those who conduct commerce.

The quarantine established by the organic acts of the State of Louisiana 1855, and as now administered by the Board of Health, has not injured destroyed, but has protected the commerce of New Orleans.

The accompanying tables, K and K continued, furnish accurate data by which to estimate the effects of quarantine as conducted by the Board of Health of the State of Louisiana on the commerce of New Orleans.

The opponents of the quarantine system of Louisiana have continually used the press to arouse public indignation against the Board of Health, and especially against its President, by the cry that quarantine was destroying the commerce of New Orleans.

When the press is used as the grand channel for the communication of facts and truth to the people, it becomes at once the highest and most powerful educator of the masses, and the strongest defender of right; when, on the contrary, it suppresses facts and perverts the truth, for the gratification of personal spite and malice, and for the advancement of mercenary interests, it becomes an enemy to the highest and best interests of the commonwealth.

From the statistics embodied in Table K, extending back to the very beginning of the nineteenth century, we gather the following facts illustrating the great service rendered to the commerce of New Orleans by the execution of the quarantine laws of 1855.

1) During the ten years, extending from 1805 to 1815, inclusive, the increase of the trade of New Orleans by no means corresponded with that of the population; on the contrary, a large falling off was exhibited even before the commencement of the war of 1812 to 1815; the close of this war, however, inaugurated a new era in the commercial history of New Orleans; the exports increasing from $387,191 in 1814 to $12,924,309 in 1815. This wonderful advance, however, was checked, and a large falling off was exhibited during the next six or seven years, although the average largely exceeded that of any previous ten years.

2) From 1820 to the commencement of the American civil war—1820 to 1860, inclusive—the increase of trade and population of New Orleans was remarkable.

3) It is worthy of note that when the quarantine system, as it now exists, was established in 1855 the total exports were $55,400,711 and the imports $12,923,608; while four years after, in 1860, the exports reached $77,393,567 and the imports $20,920,849. From 1843 to 1849, inclusive, the exports of foreign and domestic merchandise averaged about $40,000,000, the average of the imports from foreign countries was barely $9,000,000 per annum.

4) It is evident from the statistics recorded in tables K and K continued, that under the direction of the present Board of Health, 1880-83, the com-

merce of New Orleans has been as great as at any similar period since the close of the civil war, 1861--65; and that, with the exception of the year 1860, New Orleans actually enjoyed a larger commerce in 1880, during the action of the present quarantine law, than in any other year from her foundation.

The quarantine was conducted upon the most liberal principles in 1875, 1876, 1877 and 1878; and it is precisely in these years that we observe the greatest falling off in the commerce of this port.

(e) All the great sanitary and quarantine measures of the past twenty-eight years in Louisiana may be directly traced to the act to establish quarantine for the protection of the State, approved by P. O. Hébert, Governor of the State of Louisiana, on the fifteenth of March, 1855. During the preceding 155 years of the existence of the colony, province and State of Louisiana, the sanitary and quarantine efforts of the State and people were spasmodic, unsatisfactory, and of short duration; and as a consequence at frequent and short intervals the people were decimated by foreign pestilence imported by maritime men and immigrants.

(f) The exports of 1880 reached $102,749,367 and the imports $11,800,977; total exports and imports $114,550,344.

The total amount collected from this vast sum for the protection of the commerce and trade of New Orleans and the Mississippi Valley was $21,872.

Can this paltry sum, barely sufficient to maintain the quarantine establishment guarding the mouths of the Mississippi River and over five hundred miles of coast, be regarded as a tax on commerce, a burden destructive to the growing commerce of New Orleans?

(g) The internal or interstate trade of New Orleans equals annually $200,000,000, exceeding greatly the value of the foreign imports and exports.

The preservation of this internal interstate trade, depends absolutely upon an efficient quarantine, guarding the approaches of the Mississippi Valley from the Gulf of Mexico. New Orleans will become a great manufacturing centre for cotton, tobacco, jute and sugar, provided that pestilence is kept away by a rigid system of domestic sanitation. If yellow fever is allowed to enter, this port will be hermetically sealed; during the embargo, which may last as long as six months, there will be practical non-intercourse with the surrounding States, and all manufactories will be closed, as there will be no possibility of shipping manufactured articles. No system of manufactories, however well ordered, can sustain such periods of inactivity.

During three years, 1853, 1854 and 1855, New Orleans lost 12,780 of her citizens by yellow fever (an imported disease), and in 1878 she lost 4,000 souls and about $15,000,000.

(h) The State of Louisiana has a right to demand that commerce which benefits the entire valley and derives its richest rewards from the cotton, sugar and grain of the great Southern and Western States, shall pay a sufficient amount for such a system of inspection, disinfection, detention and medical care of vessels, seamen and passengers as will prevent the introduction of foreign pestilence at all times and under all circumstances.

JOSEPH JONES, M. D.,
156 Washington street, corner of Camp, Fourth District.
New Orleans, La., July 4, 1883.

ONTAGIOUS AND INFECTIOUS DISEASES.

Measures for their Prevention and Arrest.

MALL-POX, SCARLATINA, DIPHTHERIA AND YELLOW FEVER.

CULAR NO. 1. PREPARED FOR THE GUIDANCE OF THE QUARANTINE OFFICERS AND SANITARY INSPECTORS AND POLICE OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA.

— BY —

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The quarantine officers, sanitary inspectors and police officers of the ard of Health of the State of Louisiana, are instructed to enforce rigidly laws and ordinances of the Board of Health relative to the exclusion, lation, disinfection and report of all cases of infectious and contagious eases.

Much has been accomplished and much remains to be accomplished by enforcement of existing laws. In virtue of the power conferred upon Board of Health of the State of Louisiana, its officers should eavor to throw a mantle of safety around the citizens; but extended itary improvement must depend largely upon the earnest and intelli- t support of the people.

anitary measures to be effectual in New Orleans and in all the parishes towns of the State, must receive the warm support of the representa- s of the people, assembled for deliberation, and clothed with certain ers in the Common Council, police jury and General Assembly.

he power of the people depends essentially upon their health, and, ce, it becomes the duty of every officer and citizen to do all in his er to secure the most healthful conditions procurable.

The situation of New Orleans at the mouth of the Mississippi river, an her extensive commercial relations with all parts of Louisiana, render absolutely necessary that the construction, support and conduct hospitals destined to the isolation and treatment of contagious a infectious diseases, as well as the supply of the necessary amounts money for the conduct of her sanitary affairs should depend not up accident or the caprice of bodies perpetually changing with politic revolutions. The strong arm of the organic law of the entire commo wealth should be exerted in behalf of the welfare of the entire peop and a specific sum for the exclusion of pestilence, and for its isolation a treatment, as well as for the conduct of the sanitary affairs, should appropriated from the moneys collected by taxation.

CONTAGIOUS OR INFECTIOUS DISEASES.

The following facts represent the present state of our knowledge, a have been condensed not only from personal observation and experien but from the writings of such eminent sanitarians and physicians as Jo Simon, Alexander Collie and E. C. Seaton, and are now placed on record, merely for the guidance of the sanitary officers of the Board of He of the State, but also for the information and guidance of citizens.

Contagious or infectious diseases are spread by means of infectious ticles, and systematic means should be instituted to destroy the dis germs or particles, and to prevent their being carried from one pe to another.

Those parts of the body which are the breeding places of the contag particles give off the poison in the greatest amount; for example:

In scarlet fever, the mouth, throat, nasal passages, skin and uri organs.

In diphtheria, the mouth, throat and nasal passages.

In small-pox, the pustules, chiefly of the skin.

In measles, the skin and air passages.

In whooping-cough, the air passages.

In typhoid fever and cholera, the discharge from the bowels.

The portions of the body thrown off and containing the contagium, pass into the air, or find their way into water or food, and in this w introduced by breathing, drinking or eating, or through broken su of the body.

Scarlet fever, diphtheria, small-pox, measles and whooping-coug very readily communicable through the atmosphere.

The contagium ot small-pox, scarlet fever and diphtheria remain vi for a great length of time, and at great distances, and these diseas most destructive in their effects.

The number of contagious and infectious diseases is limited; the bers of this class of diseases have different periods of incubatio symptoms whenever developed have a regular course; some perso more susceptible to the action of the poisonous particles which p disease by contagion or infection, than others; as a general ru attack of a contagious disease is a cause of exemption from future a contagious diseases often assume an epidemic character, and the in spread and decline of some of these diseases are clearly related to c conditions and variations of heat and moisture.

However imperfect and unsatisfactory our knowledge may be as to the absolute nature of the poison or poisonous particles which produce disease by contagion or infection, it has, nevertheless, been demonstrated by sanitarians that some of these poisons are removable and destructible by physical and chemical agents, whilst certain contagious diseases, as chicken-pox, whooping-cough and mild measles, do not specially demand the attention of sanitary officers; on the other hand, yellow fever, scarlet fever, malignant measles, typhus or ship fever, typhoid fever, diphtheria, cholera, small-pox, Asiatic plague, and leprosy, should be combatted by such legal regulations and physical and chemical agencies as will prevent their spread.

Thorough cleanliness of all human habitations, and of all buildings used for animals, and of all yards, privies, alleys, streets, gutters, sewers and canals; the frequent cleansing and disinfection of all privies, and the daily removal of all garbage and filth, from the limits of the city; thorough drainage, the removal of all stagnant water around and under dwellings; thorough ventilation of all habitable and inhabited and occupied buildings and rooms; thorough cleanliness of human bodies, clothing, beds, bedding, furniture and utensils of every description; sufficient supplies of wholesome nutritious food; and abundant supplies of pure water, for drinking, cooking and washing, constitute the essential conditions of public health.

Filth, crowding, bad ventilation, foul air, dampness, scanty or unwholesome food, dirty bodies and dirty clothing and unwholesome and vicious habits of life, and especially the abuse of alcoholic liquors, at all times depress the vital powers, and lead to fatal forms of disease which largely increase the mortality; and epidemic diseases, as yellow fever, typhus fever, typhoid fever, small-pox and Asiatic cholera are increased by these conditions, in violence.

Improvement, resulting from mental, moral and physical advancement, will be the chief agency in overcoming evils, vices and diseases engendered by the ignorance and filth, almost necessarily associated with poverty; but the health authorities may accomplish much good in preventing, controlling, limiting and resisting the spread of endemic and epidemic diseases by executing, efficiently and continuously, all sanitary regulations and laws which promote the highest state of cleanliness of all private and public buildings, premises and thoroughfares.

With reference to small-pox, disinfection and isolation, with vaccination, constitute the fundamental measures for its prevention and arrest; the object being to close up the channels through which the contagion is conveyed from the sick to the well; to destroy the contagious matter and to prevent the accumulatation of disease germs, and to produce in human beings a mild, non-contagious disease, protective against small-

DEFINITION OF TERMS.

CONTAGION AND CONTAGIOUS DISEASES.

The word *Contagion* is applied in pathology to the property and process, by which in certain diseases the affected body, or part, causes a disease like its own to arise in other bodies or other parts.

The Latin word *Contagium* is used to denote the specific material in which the infective material actually resides.

By *Fomites*, we understand substances capable of retaining contagium particles, and thus of being the means of propagating any infectious disease. The most important fomites are clothing, bed clothes, bedding, woolen garments, carpets, curtains, letters, etc.

Contagion attaches itself essentially to a material *contact*; it is not necessary, however, that when infection is spread from individual to individual the contact of individuals must have been *immediate;* but in all cases there must have been such passage of material from the one to the other as was in itself at least *a mediate* contact between them.

The various *specific matters* which affect contagion in the living body and induce specific diseases, seem all to have the characteristic of *self-multiplication;* now the faculty of *self-multiplication* is eminently one of the characteristics of vital action; hence, when it is said that all contagia are self-multiplying things, this is being strongly to suggest that perhaps all contagia are endowed with life.

CLASSIFICATION OF CONTAGIA.

Contagia have been conveniently divided into two classes, namely, the true or *Metabolic Contagia* and *Parasites.*

The *True* or *Metabolic Contagia* in their respective and specific ways operate *transformingly* on the live bodily material which they affect; on the contrary, the Parasite, however much it may grow or multiply in the body, produces no qualitative effects specific to itself, but only such effects as are of common kind to it and all other parasites, indicating its mechanical intrusivenesss in the parts which it occupies, and sometimes by the *drain*, which it makes on its hosts, of general nutritive resources.

The identity of each true metabolic contagium is settled in experimental and clinical observation, by the uniformity of the operation of each in any given animal body which it affects: each of the diseases propagates itself in its own form in an exact identity, as if it were a species in zoology, or botany; and in each such repetition of the disease there is a multiplication of material which has the same infective property.

METABOLIC CONTAGIA.

One of the most important and characteristic facts in the physiology of metabolic contagia, is the preference (intimate *connexion or chemical distinctiveness*), which particular contagia show for particular *organs* of the body, so that by the exercise of this preference, there is given to each of the diseases its own set of clinical and anatomical characters.

In regard to some of these contagia, different persons, and particular persons of different family stocks, show original differences of susceptibility.

Many of the best known febrile contagia, run a course of *definite duration* during which all present and in many cases all future susceptibility to the particular *contagium is utterly exhausted from the patient;* so that reproduction of the same contagium will no more renew that patient's disease than yeast will excite a new alcoholic fermentation in any previously fermented bread or wine.

It has been inferred from this fact, that each such contagium, operating with a chemical distinctiveness of elective affinity on some special ingredient or ingredients of the body; and that exhausting this particular material in febrile process, which necessarily ends when the exhaustion is complete, is the bodily change which the contagium specifically per-

The transmission of various contagious diseases in communities is eatly influenced both in detail and in aggregate by differences of indivi- al receptivity ; but there are conditions, not primarily of a personal kind, hich operate on a very large scale, in determining the spread of some the metabolic infections, giving to them respectively at certain times, a ecial increment of spreading poison, and also special malignity.

The wider the survey of epidemiology, the more certain it becomes, at outside the conditions which are personal and local, there are great smical conditions, such as attach to the normal succession and occasional normality of seasons, in respect of the insolation of our planet, and of e temperature and humidity of air and earth.

When any metabolic contagium enters the animal body, it requires an erval of time, and in most cases a considerable interval, before its meta- lic effects can become manifest even to skilled observation. The period latency or so-called incubation varies greatly in different diseases; in drophobia it is very rarely less than one month, and is certainly often several months ; in syphillis the infected spots remain generally for at st a fortnight, and may remain even as much as five weeks without any ensible change ; and the roseola of the general infection will not be n till some weeks later, when, generally, at least three months will have psed since the first inoculation ; in Small-Pox the fever does not attrac- ice till about the twelfth day after infection, nor the eruption till two s later ; and in measles the incubation time, though perhaps less uni- m, seems to be little, if any, shorter than small-pox.

NDITIONS WHICH FAVOR THE SPREAD OF CONTAGIOUS DISEASES.

The social conditions through which the more fatal infectious diseases enabled to acquire *epidemic* diffusion are chiefly the following :

. Persons first sick in families and districts, instead of being isolated n the healthy and treated with special regard to their power of spread- infection, are left to take their chances.

. Especially in poor neighborhoods, where houses are often occupied by eral families, and where always there is much intermingling of popula- , a first case if not at once removed to a special establishment, will al- st of necessity give occasion to many other cases.

. Persons with infectious diseases, especially in cases of slight or inci- nt attack, and of incomplete recovery, mingle freely with others in work es and amusement places of common resort, churches and day schools.

. Such persons travel freely with other persons from place to place in lic conveyances.

. Often where boarding-schools have infectious diseases, they are broken for the time, and the scholars incubating or perhaps beginning to show ction, are sent away to their respective homes.

Keepers of hotels and lodging houses often receive lodgers into rooms beds which have recently been occupied by persons with infectious ases, and which have not been disinfected.

Persons in various branches of business, relating to dress and furni- , if they happen to have infectious diseases, such as scarlatina and ll-pox on their premises, often spread infection to their customers by aling the existence of their diseases, or by sending articles home to n.

Laundries disseminate infectious diseases by carelessness in regard to ted things and garments which they receive to wash.

9. Purveyors of certain sorts of food, if they happen to have infectiou diseases on their premises, may by carelessness spread infection to thei customers.

10. Streams, purveyors of public water supplies and wells with sewag and other filth escaping into them, are most dangerous means of infection especially as regards enteric fever and cholera.

11. Ill-conditioned sewers and house drains, and cesspools receiving i fectious matters, greatly contribute to disseminate contagion often int houses in the same system of drainage, and often by leakage into wells.

MEASURES FOR THE PREVENTION AND ARREST OF CONTAGIOUS DISEASES.

1. Each case of infectious disease is a public danger, against which t public, as represented by its legally constituted health authorities entitled to be warned by proper information.

2. Every man who, in his own person, or in that of any one under l charge, is the subject of such disease, or is in control of circumstanc relating to it, is bound in common duty towards his neighbors, to ta every care, which he can against the spreading of the infection; in so as he would not of his own accord do this duty, his neighbors ought to h ample and ready means of compelling him; and that he should be resp sible for giving to the health authorities proper notification of his case order that the authority may, as far as needful, satisfy itself as to sufficiency of his precautions.

3. Persons sick with infectious diseases, or having them under t charge thus affected, so far as they may, from ignorance, not underst the scope of precautionary duties, or may, from poverty or other circ stances be unable to fulfill them, the civic authorities should give t liberally out of the common stock, such guidance, information and s efficient aid as may be needed.

4. So far as such persons are voluntarily in default of their duty, t should not only be punishable by penalty as for a nuisance, but shoul liable to pay pecuniary damages for whatever harm they occasione others.

5. That the various commercial undertakings which, in certain co gencies, may be specially instrumental in spreading of infection—w companies, dairies, laundries, boarding schools, lodging houses, inns, should respectively be subject to special rule and visitation in rega the special dangers which they may occasion; and that the perso authority in them should be held to strict account for whatever injury be caused through neglect of rule.

6. Every local sanitary authority should always have at comman the use of its district, such hospital accommodations for the sick, means for their conveyance, such mortuary, such disinfection, estal ments, and, generally, such planned arrangements and skilled se as may in case of need, suffice for all probable requirements o district

YELLOW FEVER.

DESTRUCTIVE EFFECTS OCCASIONED BY YELLOW FEVER, AND THE MORE FATAL DISEASES IN NEW ORLEANS, LOUISIANA.

The relative position held by yellow fever, with reference to the importance and fatality of various diseases, will be illustrated by the following tables:

TOTAL NUMBER OF CASES AND DEATHS OF THE VARIOUS FORMS OF FEVER TREATED IN THE CHARITY HOSPITAL OF NEW ORLEANS, DURING A PERIOD OF THIRTY-FOUR YEARS, 1844-1880.

DISEASES.	TOTAL CASES AND DEATHS, IN 34 YEARS, 1842-1880.		
	CASES.	DEATHS.	PER CENT.
Yellow Fever	19,233	9,667	50.2
Typhus Fever	7,222	1,303	18.0
Typhoid Fever	3,521	1,163	38.0
Congue Fever	636	.....	.....
Nervous Fever	51	13	25.4
Dynamic or Ataxic Fever	27	4	14.9
Ephemeral Fever	563	.....	.....
Continued Fever	1,099	88	8.0
Catarrhal Fever	111	1	0.8
Gastric Fever	113	3	2.7
Remittent Fever	15,361	311	2.0
Congestive Fever	75,670	128	0.1
Pernicious Fever	1,218	699	57.3
Malarial Fever	478	320	66.9
Malarial Poisoning	6,251	636	10.1
Malarial Cachexia	431	50	11.6
Typho-Malarial Fever	95	8	8.4
Other Fevers	117	66	47.8
	135	20	14.8
Total from all Diseases	304,213	43,718	14.3

During a period of thirty-four years, 1842-1880, 19,233 cases of yellow fever were treated in the Charity Hospital, of which 9,667, or 50.2 per cent. terminated fatally.

During the same period, including yellow fever, 132,332 cases, with 43,480 deaths of the various forms of fever, were treated in the Charity Hospital.

If the cost of treatment of each case to the State be placed at the low figure of $20, then Louisiana expended during these thirty-four years, $646,700 for the treatment of fever alone.

Whilst yellow fever numbered only 19,233 cases out of a grand total of 304,213 cases of all diseases, it caused 9,667 deaths, out of a total of 43,718 deaths from all causes, during thirty-four years, in the Charity Hospital of New Orleans.

DEATHS FROM THE VARIOUS FORMS OF FEVER IN THE CITY OF NEW ORLEANS, DURING A PERIOD OF THIRTY-FOUR YEARS, 1844-1880.

Diseases.	Deaths during 34 Years, 1844-1880.
Small Pox and Varioloid	5,726
Measles	1,589
Scarlatina	2,060
Dengue	21
Typhus Fever	1,42[illegible]
Cerebro-Spinal Fever	37[illegible]
Enteric or Typhoid Fever	3,72[illegible]
Simple Continued Fever	40[illegible]
Yellow Fever	28,73[illegible]
Gastric Fever	1[illegible]
Malarial Fever	
Intermittent Fever	92[illegible]
Remittent Fever	1,29[illegible]
Congestive Fever	6,33[illegible]
Typho-Malarial Fever	[illegible]
Malarial (unclassified)	3,74[illegible]
Total	56,47[illegible]

During a period of thirty-four years (1844-1880) the following disease caused the number of deaths specified in New Orleans:

	Deaths during 34 Years.
Cholera	11,[illegible]
Cholera Morbus	[illegible]
Cholera Infantum	2,4[illegible]
Total	15,1[illegible]
Enteritis	6,[illegible]
Diarrhœa	8,[illegible]
Dysentery	7,[illegible]
Total	22,[illegible]

Deaths from phthisis pulmonalis in New Orleans, during thirty-fo years, 1844-1880, 24,071.

Total deaths in New Orleans, during thirty-four years, 1844-1880, fr all causes, 242,426.

While fevers of all varieties destroyed in the city of New Orleans 56,4 citizens in thirty-four years, yellow fever destroyed only one-half of t number, namely 28,739.

If these fevers be divided into separate groups the mortality will sta thus:

Total deaths from small-pox, measles and scarlet fever during thirty-four years ..... 9,[illegible]

Total deaths from dengue, typhus fever, cerebro-spinal fever and simple continued fever ..... 5,[illegible]

Total deaths from yellow fever ..... 28,[illegible]

Total deaths from the various forms of malarial fever. ..... 12,[illegible]

The deaths from the various fevers and malarial fever, indigeneou the soil or common to all parts of the great valley of the Mississippi, w very nearly half as numerous as those caused by yellow fever; conges fever alone caused 6337 deaths.

It is well established by the records of medicine, extending back 2000 years, that drainage and agriculture are the great and only abso and certain means of destroying the cause of malarial fever.

If the value of a citizen in the State be rated at $1000, then the cit New Orleans has lost during thirty-four years $56,478,000 by fevers al other diseases, however, whose existence and propagation are largely pendent upon defective drainage have been busy in their work of dest tion.

Thus during the thirty-four years specified phthisis pulmonalis destroyed early as many citizens as yellow fever, namely 24,071; enteritis, dyssen ery and diarrhœa 22,301, and cholera, cholera morbus and cholera infan im 15,144; total from phthisis and bowel affections 61,616 deaths.

Those diseases which are common to the entire valley caused 61,616 eaths, exceeding those by fevers 5138.

Without doubt, a large proportion of the deaths from phthisis pulmon is and bowel affections are preventable and directly referable to defective rainage.

Fevers, general affections and phthisis pulmonalis alone caused in New rleans 118,094 deaths in thirty-four years, out of a total of deaths from l causes of 242,426.

We may therefore affirm that nearly one-half the deaths in New Orleans uring the past thirty-four years (118,095) were caused by preventable dis ses, the important sanitary measure for the diminution of the same being fective drainage.

From these diseases New Orleans has lost in thirty-four years $118,094,- 0.

No city in the world has suffered more obliquy than New Orleans in putation for health, and more especially in regard to its epidemics of yel w fever.

If by the application of all the facts known to science, the sanitary con tion of New Orleans can be so improved as to exclude yellow fever, or arrest it in its first beginnings it is not unreasonable to believe, when e consider the extent and extraordinary fertility of the basins of the Mis sippi and Missouri, that New Orleans is destined to become the greatest porium, not of America only, but of the world.

EASURES FOR THE EXCLUSION, PREVENTION AND ARREST OF YELLOW FEVER.

The measures for the exclusion, prevention and arrest of yellow fever y be divided into three divisions.

1. Local Sanitation.
2. Sanitation of all public conveyances, including ships and railroads.
3. Quarantine.

The absence of yellow fever from New Orleans during 1880, 1881 and 82, would support the theory that this disease is not indigenous to this ality.

f yellow fever be not indigenous to New Orleans, its exclusion depends n a rigid quarantine.

When introduced the health authorities should be provided with suffi t men and means to combat the disease and to thoroughly disinfect and anse every focus of disease as was done in 1882, successfully, by the ard of Health of the State of Louisiana, in the Third District, in the es of Forbes, Stroh and Englund.

he great difficulty rests in the prompt recognition and immediate report the first case or cases. Correct diagnosis is of infinite importance. In er to present a bases of discussion, and, if possible, agreement amongst profession, I have drawn up the following statement embracing the ult of my, original investigation during the past twenty-seven years.

GENERAL OUTLINE OF THE SYMPTOMS AND PATHOLOGICAL ANATOMY OF YELLOW AND MALARIAL FEVERS.

Yellow Fever Symptoms and Pathology.

YELLOW FEVER.

DEFINITION—A pestilential fever of continuous and specific type, originally developed in tropical and insular America; confined to definite geographical limits and dependent in its origin and spread upon definite degrees of temperature, and capable of transportation and propagation in ships and in towns and cities, in those portions of North and South America, which lie between 45° N. lat and 35° S. lat.; the disease has been limited chiefly to the coast of tropical Africa, rather from the number and position of the commercial towns, than from any climatic causes adverse to its propagation elsewhere; it has been imported from the Antilles and from the shores of the Gulf of Mexico and from tropical America, far in the interior of the Valley of the Mississippi, from New Orleans to St. Louis and along the Atlantic coast, from St. Augustine, Fla., to Portland, Maine, and even across the Atlantic ocean to Cadiz, Carthagena, Barcelona, Gibralta, Lisbon, St. Nazarre to Plymouth and Southampton, England. It presents two well-defined stages; the first characterized by intense pain in the head and back, injected eyes, rapid circulation, elevated temperature, which may extend from twenty-four to 160 hours, according to the severity of the disease; the second characterized by depression of the nervous and muscular forces, and of the general and capillary circulation, capillary congestion, slow and intermittent pulse, jaundice, urinary suppression, passive hæmorrhages from the stomach and bowels, nares, tongue, gums, uterus, vagina, gall bladder and anus, and in extreme cases from the eyes, ears and skin; black vomit; convulsions, delirium and coma. In Plate 5, figure 16, we have a representation of the countenance of a patient, in the first stage of yellow fever, of the sthenic form. The capillary congestion of the face and eyes is well shown, and upon first view the case might be mistaken for one of an eruptive disease as scarlet fever. We do not intend to convey the impression that the intense capillary congestion here depicted is present in every case of yellow fever; on the contrary, we have, especially in New Orleans, great variations in the severity and duration of the febrile stage and corresponding variations in the degrees of congestion of the superficial capillaries. As a rule unacclimated individuals who have recently come from elevated non-malarious and cold regions present the greatest degree of congestion of the super-

Malarial Fever Symptoms and Pathology.

MALARIAL FEVER.

The general division of malarial or paroxysmal fevers into three types, namely intermittent, remittent and pernicious or congestive fever, admits of several subdivisions.

Thus the forms of malignant intermittent are numerous, but all are attended with congestion of one or more vital organs, which may endanger the life of the patient, and which may pass into actual inflammation attended with effusion of plastic lymph, serum or blood. In many cases in which no structural alterations have ensued during the congestive stage, there comes on at the conclusion of the paroxysm a perfect intermission of all the violent symptoms. The sudden disappearance of the most alarming symptoms may lead to a false prognosis, and prevent the institution of energetic measures. It is well known that in the malarious regions of the Southern and Western States, one of these violent paroxysms, whenever occurring, either at the onset of the disease or during the progress of an ordinary mild intermittent, is the harbinger of others still more violent. If unheeded, the disease may prove fatal at the third, fourth or fifth paroxysm.

The nature and effect of the malignant paroxysm will depend upon various causes, as the state of the constitution of the patient, peculiar idiosyncracies, pre-existing diseases, the effects of diet and occupation, the composition of the blood, and the organ or organs chiefly involved. If the cerebro-spinal system is chiefly affected, the paroxysm may be characterized by delirium, coma, convulsion and tetanic spasms, hence some writers have distinguished the *comatose*, the *delirious*, the *convulsive* and the *tetanic* varieties of the malignant intermittent.

In many cases, in which the whole force of the disease appears to fall upon the cerebro-spinal system, these symptons indicating serious disturbances of the functions of animal life, as disorder of the mind, coma, apoplexy and paralysis, catalepsy and various involuntary spasmodic movements, may disappear entirely as the paroxysm abates, not even a trace of headache being left during the intermission; in some cases, however, effusion may take place into the ventricles, or within and around the cerebro-spinal system, and lead to the establishment of permanent coma, with dilatation of the pupils, general paralysis and death. In some cases the effusion of

YELLOW FEVER.

ficial capillaries; whilst the natives present the slightest degree, and the faintest blush during the febrile stage. Deep redness of the surface and great capillary congestion during the first stage of febrile excitement indicate great danger. In Plate 6, figure 17, we have a representation of the countenance of the same patient in the last stage of yellow fever, attended with hæmorrhage and black vomit. In this stage the capillaries of the surface are still congested, but the movement of the peripheral circulation is sluggish, the blood has lost its brilliant hue. The presence of jaundice is also indicated. These illustrations are similar to those of Pariset and Mazet in the yellow fever of Cadiz in 1819. In its origin and propagation, it is not dependent on those conditions and causes which generate malarial paroxysmal fever, from which it differs essentially in symptoms and pathology. One of the prominent symptoms of the first stage, is the rapid increase of the pulse within the first few hours of the febrile excitement, and the progressive diminution of the beats of the heart, even whilst the temperature progressively rises: and in like manner the slow and feeble action of the heart constitutes a prominent and striking symptom of the second stage. Yellow fever, in common with such contagious diseases as small-pox, measles and scarlet fever, occurs as a general rule but once during life, and may be propagated by contagion; it differs, however, from the exanthematous disease, in that it has never been known to propagate beyond 48° North latitude, nor originate below a temperature of 70° F.

I will now briefly present the general conclusions as to the nature of yellow fever which I have drawn from my original investigations during the past twenty-seven years. During this period I have at various times, and in different journals, published theses sustaining the various conclusions, and I have also in my possession, in manuscript, the details of a large number of careful chemical and microscopical investigations and numerous cases illustrating the symptoms and pathological anatomy of malarial and yellow fever.

General Conclusions as to the Nature of Yellow Fever; as Drawn from Original Investigation.

1. Yellow fever is a continued pestilential fever, presenting two well-defined stages; the first characterized by active chemical change in the blood and organs, attended with elevation of temperature and aberration of nervous action, which may constitute the entire malady, and prove fatal in a manner similar to the infectious form of small-pox; and the other, a stage of depression, induced both by the sedative ac-

MALARIAL FEVER.

sists chiefly of serum, and in others of blood, with all the symptoms of hæmaplegia, paraplegia, apoplexy and paralysis. A true inflammation of some portion of the cerebro-spinal substance may result from the congestion induced during the malignant paroxysm. Recovery is possible from such states, but convalescence is often tedious, and accompanied with paralysis of one or more sets of voluntary muscles. In many cases of malarial coma, I have observed the temperature to be elevated to a degree varying from 102° to 106° F., and such elevation may be attended either with a hot, dry skin, or with a surface bathed in a hot, profuse perspiration. The action of the malarial poison is without doubt one of the causes of fatal and sudden apoplexy. It is probable that the result during the paroxysm is largely determined by preceding alterations of the arteries of the brain, and spinal cord, such as fatty and calcarious degeneration.

If the lungs of the pleura be primarily and chiefly involved, difficulty of breathing, syncope, capilary obstruction, and excruciating pains in the pleura, lungs and diaphragm, may characterize the paroxysm. In like manner these alarming and distressing symptoms may vanish, after the disappearance of the paroxysm, or structural alterations characterized chiefly by serous effusion into the air cells, bronchial tubes and pleural cavities, may ensue, and either destroy the patient suddenly or lead to painful and protracted pneumonitis and pleuritis. In some cases the effusion into the air cells consists chiefly of blood, and such pulmonic hæmorrhage must be regarded as similar to the hæmorrhages from the stomach, small intestines and large intestines, which characterize certain forms of malignant intermittent fever.

In a third form, the heart appears to be chiefly affected, either directly or through the cerebro-spinal and sympathetic system. This, the so-called cardialgic variety, is marked by excruciating pain at the epigastrium, either continuous or intermittent, intense suffering, great anxiety of countenance, vomiting, and sometimes general spasm of the muscles.

In a fourth form, the abdominal viscera, the peritoneum, the stomach, the small intestines, the large intestines, the liver and the kidneys, may one and all be involved, giving rise to the so-called peritonitic, gastric, choleraic, dysenteric, hepatic and nephritic forms of malignant intermittent. The tenderness of the peritoneum, the profuse vomitings of biliary matters, and the choleraic and dysenteric and bilious discharges, may one and all disappear during the intermission.

In a fifth form, known as algid fever, the cold stage is unusually protracted; there is

YELLOW FEVER.

tion of the febrile poison, and by profound changes excited in the blood, and in certain organs, viz., the heart, liver, and kidneys, and by the direct sedative and poisonous action of the excrementitious matter retained in the blood, in consequence of the failure, arrest, or perversion of the functions of the liver and kidneys, and by the arrest or perversion of the digestive function, in consequence of the action of the yellow fever poison, in causing perverted nervous action, capillary congestion, and active desquamation of the secretory cells of the stomach, and in consequence of the elimination by the gastric mucous membrane of certain constituents of blood and urine, viz., urea and carbonate of ammonia.

The various manifestations—as the intense capillary congestion, depression of the action of the heart, delirium, coma, convulsions, vomiting, headache, urinary suppression, uræmic poisoning, jaundice, and biliary poisoning—may all be referred to the action of the poison producing the disease, and should not form the basis for the erection of distinct types of the disease.

The action of the yellow fever poison is the same in all cases, whether mild or severe; the progress and termination of the case, as well as the manifestation of the various symptoms, depending upon the extent of the action of the poison, the condition of the system at the time of its introduction, the peculiarities of the coustitution, and the supervention of other diseased states.

The action of the yellow fever poison is definite, and the disease is characterized by definite manifestations. Yellow fever is a self-limited disease.

II. The changes of the blood appear to be continuous from the time of the introduction of the poison to the fatal termination; the intensity of the changes being increased, and their character being modified, as the disease advances, not only by the direct action, upon the constituents of the blood, of the poison, but also by the addition of certain noxious substances, as bile, urea, carbonate of ammonia, sulphates, phosphates, and extractive matters, in consequence of the profound lesions produced in the liver and kidneys.

Certain constituents of the blood, as the albumen and fibrin, are not only altered physically and chemically in the early stages of yellow fever, but, as the disease advances, from the causes just specified, certain excrementitious matters, which in a state of health are continuously eliminated, accumulate in the circulating fluid, and by their direct action upon the elements of the blood, and upon the nervous system, and by their disturbing action upon the processes of nutrition and digestion, still further alter the physical and chemical and vital properties of this fluid.

MALARIAL FEVER.

great oppression at the chest and abdomen restlessness, and prostration of nervous an muscular power. The attempt at the for mation of the hot stage proves abortive the skin becomes cold, pale and shrunke on the extremities, and covered with a col clammy perspiration, while, on the con trary, the central portion of the body an the internal organs are hot. In some case of algid fever, I have observed the tempe ature of the extremities to be 80°, while that of the trunk has reached 104°., an higher. The patient complains of intens thirst, and when water is drank it is fr quently rejected by vomiting; the pulse small, frequent, and almost imperceptib at the wrist; the heart beats in a tumult ous, irregular manner, giving a thumpin sound to the ear, the number of beats som times reaching 180; the respiration is irre ular, often panting, and numbering 40 an over to the minute; there is great restle ness, jactitation, impatience of bed cov ing, with continuous complaints of oppr sive heat, not only at the chest and abd men, but even on the cold extremities, that the patient refuses to have them co ered.

The intellect is generally undisturbed a the expression of the countenance may qnict, even when the pulse cannot be f and when the disorder of the circulat and temperarure becomes so extreme th the heat of the trunk is reduced, and ev the tongue and mouth become cold. T irregularity continues through the wh period of the paroxysm, and it is only the end of it, in favorable cases, that temperature and circulation are parti restored.

In algid fever we have congestion of internal organs, prostration of the nerv and muscular forces, and marked distu ances of the circulation and calorificat As the circulation and calorification dep mostly upon the cerebro-spinal and syn thetic nervous systems, as well as upon physical and chemical changes of the bl and organs, the algid state must be refe at least to lesions of certain ganglionic or tracts of the cerebro-spinal and syn thetic nervous systems; and whilst sim phenomena, but less in degree and durat are manifested in every true malarial c it is not entirely correct to regard the a state as simply a *prolonged chill*, for in algid state the chill is followed by im fect reaction, and the elevated tempera of true chill is rarely reached in the cer organs, whilst there may be an ac diminution of heat.

When from any cause, as bad diet, ex sive exposure to cold and wet, the cont ous use of salt meat, or the prolonged ac of the malarial poison, the constitutio the blood is altered, hæmorrhages place during the congestive stage of m

YELLOW FEVER.

The blood of yellow fever patients under the microscope differs essentially from that of malarial fever patients; in the former disease, the blood corpuscles rapidly assume a crenated form, with minute transudations upon the surfaces. In some cases of yellow fever the blood often contains small particles, possessing a vibratory motion. I have often observed bacteria, and the filaments of a delicate fungus in the blood of yellow fever patients. Blood from yellow fever patients has been allowed to stand, and the development of the micrococci, bacteria and fungi watched. I also diluted the blood, and added sugar and other materials, and observed the development of living organisms. If fresh blood from a yellow fever patient be injected into an animal, it will produce fever, which, as a general rule, is not fatal. If, however, the blood be abstracted from the dead subject, or if, after abstraction from the living subject, it be allowed to stand for a short time, say two or three hours, it proves rapidly fatal to animals, even when injected under the skin. These experiments were performed in 1870, 1873 and 1878 and 1880 and 1882. Many of the animals, into whom small quantities of yellow fever blood and black vomit had been injected, died on the first, second, third, fourth or fifth days, in convulsions. A beautiful black and tan terrier into whom I injected a small quantity of the blood of John Forbes (1882), was seized with violent delirium, the animal rushing about, and barking and striking its head violently against obstacles. The animal died in tetanic convulsions on fifth day. Fresh black vomit introduced subcutaneously acts as a local irritant and also produces fever. If black vomit be taken from the stomach of a dead man, or if that from a living person be allowed to undergo putrifactive change, it destroys in a few hours the life of an animal to which it may be administered under the skin. The black vomit a short time after ejection, in many cases, becomes filled with new forms of vegetable and animal life, such as the spores and thalli of *torulae*, the organized cells found in yeast and other fermenting liquors, and also various forms of bacteria. I have noticed as characteristic of the secretions and excretions of yellow fever, an exceedingly delicate fungus which is evidently a species of the plant which produces fermentation in beer and sugars.

The appearance presented by black vomit under the microscope, is represented in Plate 8, figure 24, Black Vomit of Yellow Fever, 1876; figure 26, Fungus developed on Surface of Black Vomit, 1876; figure 25, Fungus developed in Black Vomit, 1876; figure 27, Black Vomit of William Dwyer, died of yellow fever, September 15th, 1878; figure 28, Black Vomit of James Kenney of

MALARIAL FEVER.

nant intermittent fever, we may have a sixth variety, which has been indicated as *hæmorrhagic malarial fever*.

Without doubt, in this sixth form of intermittent, hæmorrhages from various organs, as the stomach, lungs, kidneys and bowels, are directly due to the prolonged and potent action of the malarial poison upon the fibrin and colored corpuscles of the blood, as well as to the various alterations in the spleen and liver, characteristic of all the forms of malarial fever.

The hæmorrhagic form of malarial fever may be attended with many of the prominent symptoms of the preceding varieties, as obstinate vomiting of biliary (grass green) acrid matters, intense thirst, restlessness, feeble rapid pulse, oscillations of temperature, oppression of breathing, coma, convulsions and apoplexy.

In many cases of malarial hæmaturia, after the supervention of jaundice the pulse becomes slow, falling even below the standard of health, even when the temperature of the trunk may be elevated to from 101° to 104° F. In this respect, as well as in the great irritation of the gastric mucous membrane, accompanied with incessant vomiting, the hæmorrhagic form of malarial resembles yellow fever. The latter disease, however, differs from the former in the character of the vomited matters. Whilst in the first stages of yellow fever the vomited matters may consist of mucous and bile, in the latter stages the black vomit is essentially altered blood. In malarial hæmaturia the dark and in some cases black vomit consists almost always of dark greenish black biliary matters, and rarely contains blood. The urine also differs essentially in the two diseases; in grave cases of yellow fever, the urine contains albumen and yellow granular casts, and detached cells of the tubular uriniferi. In well marked cases of yellow fever, albumen may appear as early as the first day of the disease, but most generally it appears upon the second, third or fourth day. Blood may be present in the urine of yellow fever, but it is rarely a constituent; and even when present the granular casts of the tubuli uriniferi present a yellow color. In malarial hæmaturia the urine contains albumen, but this constituent of the blood is invariably associated with blood corpuscles and hæmatin. The casts of the tubuli uriniferi in the urine of malarial hæmaturia present a red or reddish brown color.

Suppression of urine in yellow fever appears to be due to the blocking up of the tubuli uriniferi with granular and oleaginous matter and detached cells; the symptoms in malarial hæmaturia appear to be due not merely to congestion of the kidney, but to the filling of the urinary tubes with coagulated blood.

YELLOW FEVER.

bark Excelsior, died in Touro Infirmary, with yellow fever, July 10, 1880.

Plate 14. Fungus developed in Black Vomit, 1873; similar fungus developed in black vomit and in various portions of organs and excretions, in 1870, 1872, 1873, 1874, 1876, 1878, 1880 and 1882.

In a case of yellow fever, attacked in New Orleans, September 8th, 1878, attended with high temperature, jaundice, urinary suppression and black vomit, the blood abstracted on September 8th, at 4½ o'clock, p. m., when the pulse was 70, and the temperature of the axilla 104.8°, presented the following characteristics: after abstraction, the blood rapidly assumed a brilliant scarlet hue, like the blood of those who have been poisoned with carbonic oxide gas or cyanide of potassium. The blood was tested for hyrocyanic acid after its removal to the laboratory, but no trace of the poison could be detected.

Under the microscope, the colored blood corpuscles presented a crenated appearance and minute oval bodies, with a central nucleus similar in size and appearence to those observed in the yellow fever atmosphere. I also observed rod-shaped bacteria, and delicate thread-like filaments resembling the mycilia of minute fungi. The minute particles of matter possessing an active vibratory motion, observed in this and other specimens of blood of yellow fever patients during 1878, may have been examples of the Brunonian movement. The vibratory motion of minute particles may be associated with inorganic matter as well as organic; but from the number of these particles observed in the blood of yellow fever patients, during the epidemic of 1878, I was inclined to refer their existence, in part, at least, to the pathological processes of the disease.

The blood was received carefully into a glass-stoppered bottle, and examined microscopically at varions intervals, and there was rapid and progressive growth of the bacteria, and rotatoria and minute vibratory particles. On the third day after its abstraction and preservation in the glass-stoppered bottle, the blood literally swarmed with the red-like bacteria and rotatoria.

When the blood thus undergoing change was, twenty-two hours after its abstraction, injected sub-cutaneously into the ear and back of a large, powerful buck rabbit, death ensued in twelve hours. Putrefaction was rapid, and the coagulated blood which distended the cavities of the heart of the animal was found, upon microscopical examination, to contain similar rod-shaped bacteria and rotatoria to those observed in the blood of yellow fever subjects. The few drops of putrid yellow fever blood injected sub-cutaneously appear to have

MALARIAL FEVER.

The microscopical examination of the blood also reveals marked differences in the two diseases; in yellow fever the colored blood corpuscles frequently assume a crenated appearance, and in uncomplicated cases there is no accumulation of pigment particles and pigment cells, and the dark cells of an algæ, resembling large colorless corpuscles filled with spores of a dar brownish red color.

In malarial hæmaturia, it is rarely th case that the colored corpuscles presen any other than the normal form of bicon cave discs; whilst pigment particles, dar granular masses, and cells of a dark reddis brown hue, some of which are similar in a respects to certain palmellæ, are ofte present in considerable numbers.

In malarial hæmaturia, after death, th intestines give the reaction of bile throug out their entire extent; in yellow fever v thus obtain no evidence of the presence bile.

Changes of the Blood in Malarial Fever.

The malarial poison is capable of alte ing the constitution of the solids and fluic and of modifying and altering the type a progress and effects of various diseas even when no symptoms of aberrated, ph sical, chemical and nervous actions ha been manifested sufficient to arrest the tention of the patient.

The *colored blood corpuscles* are diminish during malarial fever; the extent a rapidity of the diminution of the colo corpuscles correspond to the severity extent of the disease. The fixed sal constituents of the colored blood corpus are often diminished in malarial fever.

The colored blood corpuscles are destro both in the liver and the spleen. colored blood corpuscles are more uniform and rapidly destroyed in severe cases malarial fever, than in any other ac disease, with the exception, perhaps pyæmia.

In the severe forms of malarial fever serum presents a golden yellow color have shown by numerous analyses that color in the various forms of malarial fe and even in the so-called malarial hæ turia, is due to the coloring matter of bile, and *not, as has been erroneously st upon superficial observations, to the esca, the hæmatin of the colored blood corpuscle*

The fibrin is diminished greatly in se cases of malarial fever; the diminutio this element of the blood is characteri not only of malarial fever, but of all fevers; while its increase, on the hand, as characteristic of the phlegm As a general rule, the diminution o fibrin in malarial fever, as in the pyr generally corresponds with the severi the disease, provided there be no in

YELLOW FEVER.

nveyed to the living and healthy animal a adly poison, and one of the most marked ects of such putrid blood was the rapid neration in the blood of bacteria.

At the same time, September 9, 1878, I ected sub-cutaneously into two healthy bits fresh yellow fever blood from an- her patient. This blood was injected thin two hours after its abstraction from patient, who was suffering with a vio- t fever which subsequently terminated black vomit and death. One of the ani- ls survived the operation, while the er died on the fourth day after the oper- on. September 11, 5 a. m., thirteen rs before death, this patient threw up k vomit and passed large quantities n the bowels. The black vomit was car- immediately from his sick chamber s specimen was vomited in my presence) my laboratory, and injected sub-cuta- usly into two strong rabbits. Local ir- tion with the formation of pus in the hborhood of this injection, attended h fever ensued in both animals, but survived the operation. On the other d, black vomit kept for some time (from nty-four to forty-eight hours) which ted a foul smell and swarmed with bac- a, as well as the putrid black vomit n from the stomachs of patients after h from yellow fever, destroyed the rab- when injected sub-cutaneously in from ve to eighteen hours.

a case of yellow fever, J. K., male, thirty-eight years, native of Germany, cked in New Orleans with yellow fever wo o'clock p. m. August 27, 1878, at- edwith high temperature, 106°, wild del- a, urinary suppression, the blood ab- ted August 29, at 9 o'clock a. m. (when ulse was 98°, and the temperature was having been the evening previous presented the following appearance: on standing the blood abstracted ed a brilliant scarlet hue, the clots small and soft and rapidly dissolved. blood then became entirely fluid a time after its abstraction by the dis- ion of the fibrin. The serum at first nted a bright golden color that rapid- anged to a scarlet hue from the liber- of the coloring matter of the colored scles. Many of the colored blood cor- es presented under low powers (400 to iameters) a crenated and granular ap- nce.

ler higher powers, one-eighteenth of h, the peculiar crenated appearance colored corpuscles was found to be to irregular elevations or exuda- on the surface of the corpuscles. Many colored and colorless corpuscles when ified 1800 diameters presented a dis- y granulated appearance wholly un- ne condition of these constituents in y blood.

blood also contained minute vibra-

MALARIAL FEVER.

matory complication. The diminution and alteration of the physical properties of the fibrin in malarial fever to any great extent, was always accompanied by congestion of the spleen, liver and brain, and serious cerebral disturbances. The fibrin is not only diminished in malarial fever, but it is altered in its properties, and its relation to the other elements of the blood and to the blood-vessels, *and in severe cases, heart clots, (fibrinous concretions) are frequently formed before death.*

The albumen is diminished during the active stages, but such diminution is not due to any loss of this constituent of the blood in the urine. As a general rule, albumen is absent from the urine in malarial fever, and when present, as in malarial hæmaturia, it is accompanied with blood corpuscles, and with casts of the tubuli uriniferi containing colored blood corpuscles.

The results of my microscopical investigations upon the blood of malarial fever, pursued during the past twenty-seven years, may be thus formulated:

1st. The malarial poison produces more rapid destruction of the colored blood corpuscles than any other known febrile agent.

2d. The destruction of the colored corpuscles takes place chiefly in the spleen and liver.

3d. The black pigment resulting from the hæmatin of the blood corpuscles, is frequently observed in the blood as it circulates in the vessels and capillaries in masses of various sizes, and in the form of cellular elements.

4th. In the malarial blood we observe frequently black pigment or melanæmic corpuscles, varying from the one ten-thousandth to the one-thousandth of an inch and even less in diameter; conglomerations of these melanæmic particles, in masses of various sizes; colorless corpuscles or leucocytes which contained granular masses of black pigment; pigment cells containing ovoid bodies resembling sporules, and in all respects similar to the brownish red palmellæ obtained by passing the air of malarial regions through melting ice. Many of the particles of melanæmic pigment are spherical, others irregular and angular, and some entirely free, others encased in a hyaline mass, others incorporated with cellular elements, which are more or less related to the white corpuscles of the blood, and to certain forms of algæ.

Plate 13, figure 51, represents the appearance of a drop of blood from a patient suffering with malarial hæmaturia, when placed upon white bibulous paper.

Figure 52 represents the microscopical appearance of the blood in malarial fever and malarial hæmaturia. The pigment particles and pigment corpuscles are shown in this figure.

YELLOW FEVER.

tory particles, varying from one-ten thousandth to one-thirteenth thousandth of an inch in diameter.

It would appear that the bacteria are more numerous in the blood at a later stage.

Subcutaneous injection of this blood into rabbits was not attended by fatal results.

The fresh urine passed by this patient on the 31st of August, at 8 a. m., was of a light yellow color, and contained a small quantity of albumen, with a few granular casts of the tubuli uriniferi, and epithelial cells of the urinary tubes, oil globules, bacteria and granular matter. Immediately after arriving at my laboratory, I injected two fluid drachms of this fresh urine (passed in my presence) subcutaneously into the backs and thighs of healthy buck rabbits. After the injection of the urine, the lower extremities were paralyzed for a few moments, but the animals were not to any perceptible degree affected by the absorption of the urine and survived the operation.

In a case of yellow fever, William Dwyer, age 27, native of Ireland, attacked with yellow fever in New Orleans, 8 o'clock, a. m., September 11th, 1878, attended with high temperature (106°), urinary suppression and black vomit, the blood abstracted on the 14th of September, 1878, presented the following appearance:

The blood upon exposure to the atmosphere presented a brilliant scarlet color. I hastened to my laboratory with the blood of this patient, which had been received into chemically clean glass-stoppered bottles, and which had never been used before, and subjected the blood to microscopic examination. The colored blood corpuscles presented a stellate and granular appearance, as if minute globules were forming upon the surface of each cell membrane or outer coating. I also detected bacteria and small globular bodies with nuclei, and rotating and vibrating globules, apparently surrounded with ciliae, in the blood of this patient, which were similar to those observed in the yellow-fever air.

In Plate 7, Figure 19, I have reproduced the sketch which I made of the blood of this patient, William Dwyer. The blood here figured had not been abstracted two hours when the drawing was made.

The blood itself was submitted to the examination of three members of the Board of Health, and to Professor McCulloch, of Baton Rouge, Professor Elliott, of the Medical Department of the University of Louisiana, Mr. Krutschnitt, Prussian Consul, and other physicians, and no difference existed amongst those observing the fresh and dried blood under the microscope, as to the altered form of the blood corpuscles, of the presence of the bacteria, and the bodies resembling in all respects spores.

MALARIAL FEVER.

The following is a brief outline of th case of malarial hæmaturia, from whic the blood was abstracted, and furnishe the illustrations, figure 51 and figure 5 Plate 13: J. E. Easterland; age twenty one years; native of Carrolton, on Ton bigby river, Alabama; entered Charit Hospital, New Orleans, November 29t 1876. Described Carrolton as a low, marsh swampy locality; informed by his paren that he suffered with chills and fever infancy, and continued to suffer thus un he left the locality at the age of ten yea Spleen had been enlarged during th period. Between the ages of ten a nineteen years lived in Jasper Count Mississippi, a healthy locality; enjoy good health, but his spleen continued to enlarged. From his nineteenth year, un a short time before entering the Char Hospital, was employed as carpenter, n Greenville, Washington County, Miss., a malarious locality. Suffered with severe attack of malarial fever in Augu 1875, and was not fully restored to hea until May, 1876. In the early part of Ju 1876, attacked with severe chills and fe on 1st of July had a congestive c Desiring to immigrate to Texas, he arri in New Orleans on the 27th of Novem but was compelled by illness to disconti his journey. On the 28th was seized v a congestive chill, which lasted for hours, and was followed by intense jaun and high fever. Admitted to the Cha Hospital November 29th, 1876. At time of admission presented the follo symptoms: Intense jaundice; pulse, respiration, 30; temperature of a 102.5°; nausea, vomiting a large quan of dark-green bilious matter. Nove 30th, 9 a. m.: Pulse, 32; respiration, temperature, 98.1°; vomits large quan of dark-green bilious matter. Has p no urine since entering the Hos Jaundice intense, even the saliva golden color. Anæmic appearance. S and liver enlarged. Seven o'clock, p pulse,1 34; respiration, 22; tempera 99.5°. Kidneys have resumed their tions.

The urine presents a dark brownis color, and contains blood, and casts dis by the coloring matter of the blood.

December 1, 8 a. m., pulse 122°, r tion 22°, temperature 100° F. Ja and bloody urine continue.

Chemical and Microscopical Examina Blood.

Serum of the blood of a deep gold yellow color. When the blood was d on white bibulous paper, the centr mine spot containing the red cor was surrounded by a deep orange colored border, due to the absorption

YELLOW FEVER.

ome of the bacteria bore a striking re-emblance to bacillus anthracis of splenic ever; others to spirochaete oberm eiri f relapsing fever. The cells resembled ose of micrococcus bombycis and of mi-rococcus ureæ and torulæ. The delicate fil-ments appeared to be similar to those of ndothryx dichtoma.

When the blood was allowed to stand in ell stoppered glass bottles, it was found pon the succeeding day, that these organ-ms had greatly multiplied.

The fresh blood injected into living nimals produced no fatal effects, whilst e blood at the end of twenty-four hours, jected in the same manner, proved rapidly tal.

Portions of the blood were placed in ass vessels, the mouths of which were refully stoppered with cotton-wool. The llowing experiments were made:

1. Simple blood. At the end of one eek all the colored blood corpuscles had sappeared, and an immense number of cteria had been devolped, many of which sembled in form human spermatozoa, ving a distinct cell with a tail-like pro-agation. These appeared to be similar to e bacillus subtilis, with spores, at one end. lso observed micrococci, vibrios, spiro-hete and spirillæ. The appearance of the trid blood of the man Wm. Dwyer, is resented in Plate 14, figure 57. The od of John Forbes, who died of yellow er in 1882, in New Orleans, presented same organisms after standing for two three days, the colored blood corpuscles ving disappeared. The appearance of putrid blood of John Forbes is repre-ted in Plate 14, figure 58.

2. Blood mixed with water, about one rt of the former to ten (10) parts of the ter. At the end of a few days, the lored blood corpuscles disappeared, and merous bacteria, resembling chiefly illus anthracis, bacterium termo and rillum tenue and micrococci.

The microscopical appearances of the od thus treated are represented in te 14, figure 59.

3. Blood mixed with a solution of stallized (white) sugar. At the end of a ek, a distinct fungoid mass, with a deep ow surface, had formed upon the free face of the liquid. Under the micro-pe this fungus resembled the aspergillus ger. The spores varied in diameter n one-four thousandth to one-three usandth of an inch in diameter. The riferous stems with spores, the sporangi-mycelium and zoospores were well devel-d. The appearance of the fungus eloped in the yellow fever blood of Wm. yer, treated with a solution of white ar, is represented in Plate 14, figure 60.

4. Blood of yellow fever mixed with lime

MALARIAL FEVER.

colored serum. This appearance is repre-sented in plate 13, figure 51. Careful tests revealed the presence in the serum of the coloring matters and acids of the bile. The deep golden hue of the serum was caused by the bile pigments, and imparted the golden hue to the skin and conjunctiva. Coagulum firm, separation between clot and serum perfect. The clot floated in golden colored serum. Under a magnifying power of 420 diameters, numerous dark granular masses and pigment cells were observed in the blood. Many of the colorless corpuscles contained numerous pigment particles. The appearance presented by the blood under the microscope is represented in plate 13, figure 52.

One thousand parts of this blood con-tained: water 820.50; dried colored blood corpuscles 86.47; fibrin 4.50; saline and extractive matters 88.53; fixed saline con-stitutes 7.18. The extractive matters of the serum contained some of the coloring matters and acids of the bile. The moist blood carpuscles in this case were 353.13 in the thousand parts of blood; and the liquor sanguinis, 616.86. In healthy blood the dried globules may vary in the thousand parts from 120.06 to 150.00, and the moist globules from 480.00 to 600.00; and the liquor sanguinis from 520.00 to 400.00. It is evident, therefore, that in this case of malarial hæmaturia, the blood contained, relatively, a much greater proportion of liquor sanguinis, and a less number of globules than in health. It is also worthy of note, that the fibrin was increased and reached 4.5 parts per thousand of blood. The blood also coagulated firmly, and there was no appearance of the destruction of the colored blood carpuscles in the serum. The formation of the dark, pigmentary particles in the blood is not peculiar to malarial haematuria, and it is probable that a large proportion of them was derived from the changes of the blood in the spleen and marrow of the bones. The increment of the fibrin in the blood in this case is of great interest, as indicating an inflamma-tory condition of the fluid, as well as of the organs most deeply involved, namely, the kidneys.

Such results overthrow entirely the view that malarial hæmaturia is the result of the action of some sudden or potent agent upon the blood corpuscles, which causes their dissolution in the blood vessels, and the escape of the haematin through the ex-cretory structrues of the kidneys.

5th. The black pigment particles indi-cate the destruction or alteration of the blood corpuscles, and the escape of the hæmatin of the red globules.

6th. The black pigment is deposited in the capillaries of various organs and tissues,

YELLOW FEVER.

water. At the end of the week numerous bacteria and delicate, elongated dichotoma threads had formed.

Figure 61 represents the microscopical appearance presented by the yellow fever blood treated with lime water.

Figure 62 represents the appearance of the putrid blood of other cases of yellow fever observed during the epidemic of 1878.

Figure 63, appearance presented under the microscope of putrid bile, from yellow fever subjects, 1878.

Figure 64, organisms in putrid yellow fever liver, 1878.

Figure 65, fungus developed in black vomit, and in various secretions, and upon the surface of organs, from yellow fever subjects, in 1870, 1871, 1872, 1873, 1874, 1876, 1878, 1880, 1882.

III. The maximum elevation of temperature is rapidly attained upon the first and second days of the disease, varying, according to the severity of the attack, from 102° to 110° Fahr., in the axilla, and, as a general rule, from the third to the fifth day, steadily falling and sinking down to the normal standard, and even below; in some fatal cases it rises again toward the end, rarely, however, reaching or exceeding 106° Fahr., and only in certain rare instances attaining the high degree of temperature characteristic of the stage of active febrile excitement.

In the preceding tables (see History of Epidemic of 1878 by author, published in N. O. M. and S. J.) we have recorded (case 94) a sudden rise upon the fifth day from 101.7° to 111°; (case 96) 106.8° on fourth day; (case 97) 107.5° on sixth day; (case 105) 105° on fourth day; (case 122) 107.2° on ninth (case 133) 107° on third day; (case 146) 109° on sixth day; (case 154) 111.1° on ninth day; (case 168) 108.2° on ninth day. The supervention of an inflammatory disease, or the occurrence of an abcess, or the access of paroxysmal malarial fever, may in like manner cause a progressive elevation of temperature, with slight evening exacerbations. The pulse at the commencement of the attack is often rapid and full; the increase in the frequency of the pulse does not, however, as a general rule, continue to correspond with the elevations and oscillations of temperature, as in many other febrile diseases; and in many cases of yellow fever the remarkable phenomenon is witnessed of the pulse progressively decreasing in frequency, and even descending below the normal standard, while the temperature is maintained at an elevated degree; and, on the other hand, the pulse often increases in frequency, but diminishes in force near the fatal issue; the occurrence of copious hemorrhage from the stomach and bowels may be attended with sudden depression of temperature, and increase in

MALARIAL FEVER.

as those of the liver, medulla of the bone, brain and subcutaneous tissue.

7th. The peculiar sallow, greenish-yellow and bronze hue, which characterizes those who have been for a length of time subjected to the prolonged action of the malarial poison, or to its powerful action in pernicious remittent fever, and in malarial hæmaturia, is due not merely to the hepatic and splenetic derangement, but also to the deposit of pigment particles in the subcutaneous capillaries.

8th. During the epidemic yellow fever of 1878, in New Orleans, I endeavored by the condensation of the organic and organized and inorganic and particulate matter of the air in various portions of the city to determine whether the living particles found in the air, differed in accordance with the locality whether malarious or non-malarious. After a minute examination of the solid organic organized, living inorganic and inanimate particles of the air in residences in which yellow fever was prevailing, it was observed:

a. In the well paved and well drained non-malarious portions of New Orleans, the solid matters of the air examined not only during the prevalence of the yellow fever but also at various intervals, during a period of six to eight months, I discovered a form which could be referred to such microscopical plants, as the chloro-coccus vulgare, proto-coccus, viridis. palmella cruenta, coccochloris, brebinonii and other confervoidæ, or unicellular algæ capable of producing chlorophyl. Certain granular cells observed in the blood of malarial fever, resemble most nearly the resting spore of bulbochæte intermedia, and the granular cells of palmella cruenta; but such cells were observed in the atmosphere of the houses situated in well paved and well drained sections of the city.

The forms of the *non-malarial*, sick-room (rooms containing yellow fever patients) were referable to those most nearly connected with putrefaction and fermentation as the bacteria and torulæ, penicillus, micrococci and cryptococæ. The absence of any of the known forms of algæ in the air of yellow fever, collected in the non-malarious, well drained and well paved portions of the city of New Orleans, is important, in that this class of plants is to be excluded from the consideration of the question relating to the origin and causation of yellow fever.

b. The water obtained by passing the air through ice and melting ice and ice water, was preserved, and portions added to solutions of sugar. The water from the rooms in which yellow fever patients were caused the development in solution of sugar of a delicate fungus, the spores of which were distributed in regular rows, with

YELLOW FEVER.

frequency, but diminution in the force and fullness of the pulse.

The cause of the rapid rise and declension of the temperature in yellow fever must be sought chiefly in the changes induced in the blood and in the organs upon which the circulation and integrity of the blood depend; neither the rapid rise nor the sudden declension of the temperature can be referred wholly to the effects of the yellow fever poison upon the nervous system.

IV. The fever of the *first stage* of yellow fever, like *fever in general*, however caused, consists essentially in elevation of temperature, arising from increased chemical change in the blood and tissues, and is attended with changes in the physical and chemical constituents of the blood, and deranged nervous action.

As long as the skin, kidneys, lungs, and gastro-intestinal canal, perform their functions, this stage is characterized, as in other fevers, by an increase in the amount of solids excreted. But this increased elimination of the products of chemical change is not, in yellow fever, a constant concomitant of the increased temperature. Not only are large quantities of the products of oxidation formed during the hot stage of yellow fever, but as we have known, by numerous analyses of the blood, black vomit, urine, brain, heart, liver, spleen, and kidneys, in this disease, they are altered to a certain extent from their characteristic state of health; the albumen of the blood, under the action of the poison, being transformed into nitrogenous and non-nitrogenous compounds, a portion of which, as the fatty matter, and altered urin, being arrested or accumulated in certain organs, as the heart, liver, and kidneys.

The peculiar phenomena of yellow fever, like those of acute phosphorous poisoning, are due to the nature of the specific poison, and the character of these changes, which is capable of exciting *primarily in the blood*, and secondarily in the nervous and muscular systems, and in the nutrition of the various organs.

Neither the rapid rise nor the sudden declension of the temperature in yellow fever are necessarily referable solely to the effects of the poison upon the nervous system; because, in the first place, the changes of the blood are among the first manifestations of diseased action, and the progress and termination of each case are largely dependent upon the extent and character of the changes of the blood, and the degree of the elevation of the temperature; and, in the second place, the sudden fall of the temperature during the succeeding stage of calm may be referred to the peculiarity of the self-limited chemical changes excited by

MALARIAL FEVER.

the thallus. This plant as well as that developed in the yellow fever blood, assumed a distinct yellow color. Both penicillium and torulæ were observed in these solutions. The microscopical objects observed in the air during the yellow fever epidemic of 1878 in New Orleans are represented in plates 15 and 16, figures 66 to 75.

First group of cases *occurring in the brick house, on second floor*, 363 *Magazine street, within the area of the infected district including the cases on Constance and adjacent streets.*

The street in front of 363 Magazine, paved with square block pavement, and side street with cobble stones—dry, non-malarious situation.

Plate 15, Figure 66. Microscopical objects in urine of Miss C. H. The urine was carefully examined upon the three last days of illness, on the 8th, 9th and 10th of August, 1878, and uniformly presented a clear light color. Under the microscope it contained a few granular casts with bacteria, cells of torulæ and penicillium, and very delicate thread-like bodies, most probably a form of bacteria; also minute particles resembling spores, possessing a rotary or vibratory motion.

Figure 67. Microscopical objects in air of room of Joseph Oliver, 363 Magazine street. Air passed through ice and ice water. Attacked with yellow fever August 10th, 1878.

Figure 68. Crystalline bodies and spores from evaporated water—from room of Joseph Oliver—August 11th, 1878.

Figure 69. Microscopical objects from air of room of Miss Rhodes, 363 Magazine street, August 16th, 1878. Attacked with yellow fever August 12th; died August 16th.

Figure 71. Crystalline bodies, spores and bacteria in residue of evaporated water through which the air of the room of Miss Rhodes, 363 Magazine street, had been passed.

Figure 70. Microscopical objects from air of room of F. Vonderburg, 363 Magazine street Attacked with yellow fever August 12th; died August 21st, 1878.

II and III. Groups of cases. 46 and 44 S. Villere and 47 S. Robinson streets; low, unhealthy locality, 495 St. Charles street.

Plate 16, Figure 72. Microscopical objects in air of yellow fever, 495 St. Charles street.

Figure 73. Microscopical objects in air of yellow fever, 44 S. Villeré street, August 2d, 1878.

Figure 74. Microscopical objects in air of yellow fever, 44 S. Villeré street, August 6th, 1878.

Figure 75. Microscopical objects in air of yard, 46 S. Villeré street, during yellow fever epidemic of 1878, August 7th, 1878.

YELLOW FEVER.

the poison, and to the structural alterations induced in the muscular tissue of the heart, and in the liver and kidneys, and the sedative action of the bile, urea, and other excrementitious products retained in the blood, upon the nervous system; and finally, in the third place, the changes of the blood and of the heart, liver, and kidneys, are of a definite physical and chemical nature, and could never be induced by a mere exaltation or depression of nervous action, and must be referred to the introduction and action of some agent or material related in a definite manner, in its constitutional and physical properties, to the fluids and solids in which it induces these profound physical and chemical changes.

Without doubt, the action of the yellow fever poison upon the nervous system may be of the most direct and important character; but well-established facts do not justify us in locating the origin of the disease wholly in the action of the poison upon the nervous system; and, in fact, the earliest sensible manifestation of disordered nervous action, as evidenced by uneasiness, loss of appetite, and chilly sensations, may be entirely secondary to the changes in the blood, by which all parts of the nervous system are surrounded and supplied.

V. While many of the most striking phenomena of yellow fever, as chills and fever, and collapse, must necessarily be attended with disordered vascular innervation, at the same time we must look to the *blood* as the *seat* of the operations of the fever poison; and, as the nutrition of every organ and tissue depends upon the proper constitution of this fluid, its alterations must affect the entire organism, and the true commencement of yellow fever is in the alterations of the relations between the blood and tissues.

The nervous system, both cerebro-spinal and sympathetic, suffers at first in common with the entire system; but as the most important offices are performed by the nervous system which relates the mind to the various parts of the body, and to the exterior world, and also regulates the actions of the circulatory and respiratory systems, and co-ordinates the actions of the component members of the system, in all the phenomena which succeed the *invasion of fever* the *blood and nervous system* become *joint factors.*

VI. During the active stages of yellow fever, profound changes take place in the organs and tissues, especially in the kidneys, heart, and liver; oil and granular albuminoid or fibroid matter transude through the capillaries and fill up the cells and excretory ducts, and arrest the function of certain organs. The liver of yellow fever does not present the soft, friable condition characteristic of true fatty degeneration. The jaundice resulting from the suppression or alteration of the excretory function of

MALARIAL FEVER.

Changes of the Circulation, Respiration and Temperature.

INTERMITTENT FEVER. During the cold stage (chill), there is a rapid, feeble pulse, rapid respiration, and hot trunk and cold extremities—the temperature of the extremities is reduced far below that of the trunk, and even below the standard of health, because the circulation of the blood in the peripheral capillaries is to a great extent arrested, apparently by the contraction of the unstriped muscular tissue of the walls of the ultimate arterioles. The diminution of the capillary circulation and the reduction of the temperature of the extremities precede the aberated nervous and muscular phenomena denominated chill. This fact corresponds with the changes in the constituents of the blood, and indicates that the first phenomena of the cold stage are connected with derangements of the vaso-motor system of nerves. As a general rule, the higher the temperature of the trunk during the cold stage, the more rapid will be the equalization of the circulation and temperature. The severity of the fever (animal temperature), which often reaches in the hot stage 107° F., is by no means an index of the character and severity of the subsequent effects. As a general rule, the higher the temperature (within, of course, certain refined limits, not exceeding 102° and 107° F.,) the more readily does the attack yield to treatment. The changes of the temperature in intermittent fever are characterized by abrupt elevations and depressions, that when the cases are projected upon a chart, they differ in the rapidity of the elevations and depressions from those furnished by yellow fever, typhus and typhoid fever and other diseases, the phlegmasiæ, phthisis, hospital gangrene and pyæmia.

REMITTENT FEVER.—The phenomena of the cold stage preceding the hot stage of remittent fever, are similar to those of intermittent fever; the difference is one of degree, and not of kind; the phenomena of the cold stage of remittent fever are more protracted than those of intermittent fever; the sympathetic system does not so rapidly regain its normal action, and the circulation in the capillaries of the extremities is not so rapidly restored in remittent as in intermittent fever. The alterations of the blood are more profound in remittent than in intermittent fever, and therefore it results that the cold stage is more prolonged in remittent than in intermittent fever. The elevation of temperature corresponds more accurately with the increased action of the circulatory and respiratory system in intermittent than remittent fever. Remittent fever may be distinguished from typhoid fever by the greater and more sudden elevations and depressions of temperature.

YELLOW FEVER.

the liver would appear to be due to the same causes which induce the suppression of the urine, viz., to the deposits of oil and fibrinous or albuminous matter in the excretory structures of the kidney and liver.

We do not mean to say that, in the case of the liver, its secretion ceases, or is even in many cases diminished; on the contrary, it may even be increased, especially in the stage of active febrile excitement; but, from the cause indicated, obstruction takes place in the biliary tubes, and there is a rapid absorption of the bile directly into the blood-vessel system, and in this manner the delivery of the bile into the intestinal canal is impaired, and sometimes arrested.

The heart in yellow fever appears to be as fully permeated with oil as the liver; in the latter organ, however, a large amount of the oil is enclosed within the cells; and in the former, in addition to the deposits of oil, there is also a granular degeneration of the muscular structures.

VII. While yellow fever is characterized in common with several other diseased states by an irritation of the gastric mucous membrane, the peculiar nature of the vomited matters does not rest entirely upon the congestion and irritation of the mucous membrane of the stomach, but is influenced to a greater or less extent by the changes of the blood, liver, kidneys and nervous system.

The vomiting in yellow fever may, to a certain extent, be regarded as salutary, as an effort for the elimination of certain excrementitious materials from the blood. In some cases, the first effect of the black vomit may seem to be salutary; the tongue improves in appearance, the febrile heat abates, and, if it were not for other found changes in the blood, liver and kidneys, lying back, as it were, of this most universally fatal symptom, beneficial results of the most important character might flow from the relief afforded by the removal of a certain amount of excrementitious matter, as urea, and ammonia, and its salts, from the blood.

The black vomit is to a certain extent an *excrementitious* product, containing *urea and carbonate of ammonia*, in addition to altered blood corpuscles, epithelial cells, broken down capillaries, mucus, various matters received into the stomach, as food and medicine, morbid exudations, and acetates, lactates, phosphates and chlorides.

The microscopical appearances presented by the black vomit of yellow fever, as well as the various forms of fungi and bacteria observed, are represented in Plate 8, figure 1.

Microscopical objects in black vomit of Griffin, who died in the Charity Hospital of yellow fever, November 2d, 1876.

Upon standing a fungus was rapidly developed.

MALARIAL FEVER.

CONGESTIVE OR PERNICIOUS FEVER.—The complete prostration of the muscular and nervous forces, the reduction of animal temperature, both in the trunk and extremities, the cold, clammy sweat, the rapid feeble pulse, the rapid, thumping action of the heart, and the sudden intervention of the most alarming cerebral symptoms, may occur gradually or suddenly, in either intermittent or remittent fever, and may be induced by several distinct causes, acting singly or in conjunction. There is a want of co-ordination between the circulation, respiration and animal temperature in congestive fever. The respirations are full, accelerated, and often panting and heaving, varying from thirty to fifty per minute, the pulse beats from 120 to 160, and feels like a delicate thread, and is often so small that it cannot be counted; the heart thumps irregularly and spasmodically and rapidly, against the walls of the chest as in some cases of narcotic poisoning; the circulation in the capillaries is feeble; the temperature of the trunk, notwithstanding the full, rapid respiration, sinks below the normal standard, and the surface is covered with cold, clammy sweat.

Changes of the Urine in Malarial Fever.

INTERMITTENT FEVER—The amount of urine excreted during the active stages, and during the earliest stage of the intermission, is less than that of health, and this diminution relates to the water and not to the solid constituents. During convalescence, and especially under the action of depurants, the amount of urine is increased. The color of the urine varies from light orange to deep red. During the active stages the free acid is increased, but diminishes during convalescence. The urea is increased during the active stages above the standard of health, and especially during similar conditions of rest and starvation. The uric acid is diminished both with and without the action of the sulphate of quinia, during the active stages, when the pulse is full and rapid and the respiration full and accelerated, and the temperature elevated. As a general rule when the fever declines the uric acid increases above the standard of health both with and without the action of the sulphate of quinia. In some cases the uric acid is increased to four fold the normal amount during convalescence. The urine of the intermission of malarial fever is characterized by heavy yellow deposits of urate of soda, and triple phosphates, the former, in the form of granular and acicular masses, and the latter as beautiful prismatic crystals. Phosphoric acid is greatly diminished and may have entirely disappeared during the chill and first stage of the febrile excitement. The phosphates are more abundant in the stage of convalescence than during the

YELLOW FEVER. MALARIAL FEVER.

men and casts are almost always absent, and the urine presents morbific periodic changes, corresponding with those of the paroxysm.

X. Yellow fever is a self-limited disease, occurring, as a general rule, but once in a life time. The constitution of the blood, and even of the textures of the body, is altered; the most important organs, as the heart, kidneys and liver, as well as the most important nutritive fluids, are profoundly impressed. These changes of the blood, heart, kidneys and liver, as well as of the nervous system, may be compared to the profound changes induced in the blood and organs, and especially in the integument, by small-pox. If this view is correct we cannot by drugs arrest or cure yellow fever any more than we can arrest or cure small-pox, measles or scarlet fever. If drugs accomplish the effect of promoting the free and regular action of those emunctories through which the poison and the products of its action are eliminated, and if further, they tend to preserve the integrity of the blood, and to sustain the actions of the circulatory and nervous system, they will, without doubt, achieve much good, and, perhaps, all that we are justified in looking for in the present state of our knowledge. By judicious treatment, by proper ventilation, diet and rest, we place the patient in that condition which is best adapted to the successful elimination of the poison and its products; but we do not arrest or cure the disease, as we certainly may do in paroxysmal malarial fever, by the proper administration of quinine.

Changes of the Urine in Yellow Fever.

The reaction of the urine in yellow fever is acid. Even in the gravest cases, attended with suppression of the urinary excretion, jaundice and *alkaline black vomit*, the urine, however small the quantity excreted, maintains an acid reaction.

As a general rule, the specific gravity of the urine in yellow fever does not vary from that of health, and ranges from 1009 to 1028. In those specimens which gave the highest specific gravity, the increase in density was clearly referable to the increase of *albumen;* for when this constituent was coagulated by heat, and removed by filtration, the urine was of low specific gravity.

In some of the gravest cases the specific gravity of the urine was only 1010, and presented a yellow color, and was turbid

YELLOW FEVER.

n the presence of cells and casts of the
etory tubes of the kidney and granular
fibrinous matters and colorless cor-
les.

uring the early stages of the disease the
e is normal in color, clearness and quan-
; as the disease proceeds, the urine be-
es of a deep yellow color, from the ad-
ture of bile, and at this stage, after the
establishment of the febrile excitement,
ut the third, fourth or fifth day, becomes
oid from the presence of the excretory
s, tube casts and yellow granular albu-
oid or fibroid matters.

he color may deepen to orange red as
disease progresses; or if the case termi-
s fatally from diminution and suppres-
of the urinary excretion, it maintains
llow color, sometimes presenting an oily
earance and motion, and consists of but
le else than albumen, bile, excretory
s and casts of the tubuli uriniferi, in a
k solution of the urinary constituents.

n some cases of suppression, although
urea is greatly diminished in the small
ount of urine excreted, it is rarely if
r entirely absent. If the case ends in
valescence, the urine is copious and the
or progressively increases in depth, and
even appear black when viewed *en*
se.

s far as my investigations extend, albu-
n is an invariable constituent of the
e in grave cases of yellow fever, and
appear as early as the first day of the
ase, but most generally it appears upon
second, third or fourth day. In yellow
r albumen may be found in the urine,
he only abnormal element, with or with-
other blood element, in company of
ndant deposit of lithatos, with or with-
deposits of purpurine or other coloring
ters in excess; in connection with bili-
coloring matters, and in connection
h apyrexial states

he constituents of bile are almost uni-
sally present in the urine, even in those
es which progress favorably and end in
valescence.

hen there is no suppression of the urin-
excretion, the urea is increased above
standard of health during the active
ges of the disease, and during the period
exhaustion or calm. I have obtained
n analysis as much as 1500 grains of
a during twenty-four hours in a case of
low fever, and that, too, when no nour-
ment was taken. Of all known diseases,
low fever is characterized by the earliest
most uniform appearance of albumen
casts in the urine, and by the most
rked tendency to urinary suppression;
en, therefore, this occurs, owing to the
mical changes exhibited by the febrile
son, the blood is rapidly charged with
a, and coma and uremic convulsions are
result.

MALARIAL FEVER.

YELLOW FEVER.

In yellow fever the presence of albumen in the urine is attended by dequamation, fatty degeneration and disintegration of the excretory cells of the tubuli uriniferi. The granular casts so common in yellow fever are composed of excretory cells, oil globules, and granular fatty and albuminoid granular matter, in some cases intimately mixed with urate of ammonia.

Those who have failed to detect albumen and casts at some period of grave cases of yellow fever, are either ignorant of the ordinary chemical tests and microscopical appearances, or have been careless and superficial in their so-called researches and observations.

When the kidneys are not seriously impaired by structural alterations, the amount of urea excreted both during the stage of active febrile excitement and that of calm or depression, is at least five times more abundant than the amount of this constituent which would be excreted by a patient in health, or even in Bright's disease similarly situated, lying perfectly quiet in bed, and taking little or no nourishment. This fact illustrates the absurdity of comparing the effects of urinary suppression in yellow fever with the more tardy results in chronic Bright's disease.

In yellow fever urinary suppression causes the retention of not only the greatly increased amount of urea, but also of the various products of the action of the poison, as sulphuric acid, phosphoric acid, extractive, coloring and biliary matters.

The fever of the *first stage* of yellow fever, like *fever in general*, however caused, consists essentially in elevation of temperature, arising from chemical changes in the blood and tissues, and is attended with changes in the physical and chemical constituents of the blood and aberrated nervous action. As long as the skin, *kidneys* and *lungs* and gastro-intestinal canal perform their functions, this stage is characterized, as in other fevers, by an increase in the amount of the solids excreted. But this increased elimination of the products of chemical change is not, in yellow fever, a constant concomitant of the increased temperature, because, in virtue of the lesions of certain organs, as the kidneys and skin, the constituents of the urine and bile accumulate and are agents in the production of aberrated nervous and muscular action, and even of death itself.

The appearance of the urinary deposits of yellow fever, are represented in Plate 10; figures No. 38, No. 39 and No. 40.

These figures represent observations extending from 1870 to 1882, a period of twelve years.

Figure 38, granular casts in urine of yellow fever, 1870.

Figure 39, granular casts in urine of yellow fever, 1876.

MALARIAL FEVER.

YELLOW FEVER.

MALARIAL FEVER.

Figure 40, granular casts in urine of yellow fever, 1880.

The history of the case furnishing the ample in 1870, has already been published the New Orleans Medical and Surgical urnal.

The history of the case furnishing the ample of urine in 1876, is worthy of brief sideration, and is as follows: E. Griffin; borer; native of Ireland; admitted to arity Hospital November 2d, 1876. Came United States ten years ago, 1866, and ided in Kentucky until the month of y, 1876, when he moved to Louisiana, d commenced ditching in the swamps of Atchafalaya river. Attacked with ermittent fever in July, and has been fering with this disease at intervals up the time of the present illness. Came to w Orleans on the 25th of October, and k lodgings in the fourth district, in the lality infected by yellow fever, on Jack- street, near the river. After remaining days in this section of New Orleans, ered the Charity Hospital November 2d, 3, having had a chill, followed by fever. ember 3d, intermission. November 4th, rn of chill. November 5th, has fever perature, 104.0°. November 6th, pulse, ; respiration, 24; temperature of axilla, 0°., a. m.; Evening, pulse, 104; respira- , 24; temperature, 104.5°. November 7th, els constipated; severe pain in head and bs; tongue red at tip and edges; furred entre; gums red and congested; con- tion of capillaries of periphery; jaun- ; conjunctiva of eyes, congested and ow. Morning: Pulse, 80; respiration, temperature, 103°. Evening: Pulse, 100; piration, 20; temperature, 103 6°.

mount of urine passed during twenty- hours (November 6th, 9 a. m., to No- ber 7th, 9 a. m.: 1,600 cubic centimetres; gr. 1,020; acid reaction; orange color. vy deposits of yellow, solid granular s, filled with yellow, granular matter. e 10, figure 39. Heat and nitric acid aled the presence of albumen, coloring ter and acids of bile. Chemical lysis showed that much of the granular ter outside the casts consisted of urate mmonia, but the granular matter within casts, consisted of albumenoid or fib- matters. 1,600 cubic centimetres of e excreted during twenty-four hours, ember 6th, 10 a. m., to November 7th, . m., contained urea, grains, 1034.88; acid, grains, 16; phosphoric acid, grains, 8; sulphuric acid, grains, 36.68; chloride odium, grains, 61.70; albumen, grains,

vember 8th.—Jaundice increasing; ue very red at tip and edges; gums and swollen; conjunctiva congested; plains of some pain in back and limbs; ning pulse 100; respiration 24; temper-

YELLOW FEVER.

ture 102°; nausea and vomiting. 8 o'clock p. m.—Black vomit; very restless, tries to get out of bed; pulse 108; respiration 24; temperature 100.8°.

Examination of blood, firm clot; Serum golden color, and contained coloring matter and acids of bile. Colored corpuscles presented a normal appearance when abstracted, but rapidly assumed the crenate form after standing. This stellate and crenate condition appeared under high powers to be due to exudations upon and corrugation of the outer surface of the colored blood corpuscles. Numerous small globules about the one-seven thousandth of an inch in diameter were observed in the blood. Upon standing several days, the cells of a fungus were developed and the colored corpuscles entirely disappeared.

1000 parts of blood contained: water, 788.5; colored blood corpuscles (dried), 140.5; fibrin, 1.47; albumen and extractive matters, 69.43; saline matters, 9.74. Amount of urine passed during twenty-four hours, November 7th to November 8th, 9 a. m., 1725 cc; sp. gr. 1017; acid reaction, heavy deposit of yellow cells and granular casts, granular matter, urate of ammonia, colorless corpuscles and cells of kidneys; colored matter and acids of bile present. 1725 cc of urine contained: urea, grains 976.99; uric acid, grains 34.5; phosphoric acid, grains 22.0; sulphuric acid, grains 78-2; albumen, grains 80.1.

November 9th.—Patient in extremis; dark yellow copper hue of surface, with congestion of capillary circulation; threw up black vomit during night; pulse 120; respiration 40; temperature of axilla 97.5 F.; throws up black vomit; intellect clear.

Amount of urine passed during twenty-four hours, November 8th, 10 a. m., to November 9th, 10 a. m., 2225 cubic centimetres; of a deep orange golden color; biliary coloring matters and acids present; deposit less in quantity, but presents the same microscopical character; sp. gr. 1015; reaction acid. During this and the preceding day the urine has emitted a most foul and disgusting odor, resembling that of decomposing albumen. 2225 cc of urine contained: urea, grains 719.5; uric acid, 17.8; phosphoric acid, 25.6; sulphuric acid, grains 74.8; chloride of sodium, grains 84.5; albumen, grains 33.3. Patient died at 12½ p. m.; intellect clear up to the time of death. No post-mortem rise of temperature

Post-mortem three hours after death; golden yellow hue of skin, with deep purplish mottling of dependent portions. The weight of the different organs was as follows: liver, 50 Troy ounces; spleen, 11 ounces; kidneys, 12 ounces; heart, 9 ounces. Lungs normal. Heart yellow and softened. Left ventricle dilated and hypertrophied.

MALARIAL FEVER.

YELLOW FEVER.

Appearance presented by heart shown in Plate, 7, Figure 20. 1000 parts of the heart contained: water, 786.4; solids, muscular fibres, etc., after removal of oil, 267.0; oil, 6.5. Under the microscope, transverse markings of muscular fibres and heart indistinct, and much oil and granular matter deposited within and around the muscular fibres. See Plate 7, Figure 21. Liver showed the previous action of malaria and presented a mottled appearance. See Plate 7, figure 30, figure 31, figure 33. Stomach, mucous membrane congested. Plate 8, figure 23. Stomach contained much black vomit; microscopical character represented in Plate 8, figure 24.

MALARIAL FEVER.

TABULAR VIEW OF THE PATHOLOGICAL ANATOMY OF YELLOW FEVER AND MALARIAL FEVER

YELLOW FEVER.

EXTERIOR.—Generally full and not reduced in flesh; features may even present a swollen, bloated aspect. Skin of face and upper portions of trunk of a golden yellow color. Dependent portions of body of a mottled, purplish and yellow ecchymosed appearance. Black vomit frequently oozes from corners of the mouth, and trickles down the face and neck. When the muscles are cut, a large quantity of dark blood escapes, which, upon exposure to the atmosphere, changes to a bright scarlet hue. Putrefactive changes take place rapidly after death. In some cases of yellow fever, especially when the functions of the kidneys have been arrested for some time before death, the putrefactive changes take place with great rapidity and energy, and sometimes even appear to commence before death, the body exhaling a disagreeable odor.

CEREBRO-SPINAL NERVOUS SYSTEM—SYMPATHETIC NERVOUS SYSTEM.—The post mortem examinations of the brain, spinal cord and sympathetic system have thus far revealed no characteristic lesions to which the aberrated nervous symptoms of yellow fever can be referred. Beyond congestion of the capillaries of the cerebro-spinal and sympathetic systems, which congestion appeared to be referable to the same cause as that producing capillary congestion in the internal organs, I have observed no structural, hemorrhagic, lesion, as fibrinous effusion, softening of the cerebro-spinal and

MALARIAL FEVER.

EXTERIOR.—The general appearance of those who die from the effects of malarial fever, will depend upon the nature and length of time and the effects of the disease. When stout, healthy men are suddenly destroyed by pernicious malarial fever, the body may present the fulness of health; and in such cases the superior portions of the body may, as in yellow fever, present a golden yellow color, whilst the dependent portions present a purplish and mottled appearance. The jaundice and mottling of the skin, however, as a general rule, present to a less degree than in yellow fever. In cases of protracted bilious fever, the body is frequently greatly emaciated. In chronic malaral poisoning, attended with enlargement of the spleen and cirrhosis of the liver, the belly and body and limbs generally are distended with dropsical effusion. The cut surface of the muscles presents a purplish hue, and the change to the arterial hue, upon exposure to the atmosphere, is much slower and less perfect than in yellow fever.

CEREBRO-SPINAL NERVOUS SYSTEM.—SYMPATHETIC NERVOUS SYSTEM.—As far as my observations have extended in malarial fever, the dura mater was always normal; the arachnoid membrane pearl-colored, opalescent in some cases, in others perfectly transparent and normal in appearance; the blood vessels of the pia mater congested with blood, but most generally without marks of inflammation. Subarachnoid fluid in almost all cases clear, transparent, and in some cases of a golden color; the amount varied in different cases, sometimes exceeding, but most generally

YELLOW FEVER.

sympathetic nervous structures. Chemical analysis revealed the presence of urea, bile, and leucine in the brain, and to the effects of these substances, as well as to the direct action of the yellow fever poison, must be referred the aberration of intellect the restlessness, convulsions and coma.

The amount of the congestion of the blood vessels of the brain will to a certain extent vary with the stage and with the conditions under which death takes place. Thus, when the functions of the kidneys are greatly impaired or wholly suppressed, owing to the retention of the watery element of the blood, the vessels throughout the entire system are filled with blood to repletion, and the brain is especially, from its soft structure and the character of its circulation, the organ most affected. In such cases, the blood is seen issuing from numberless vessels when sections of the brain are made. Under the microscope, the thin sections of the brain reveal a state of great hyperæmia, the minute capillaries being filled with colored blood corpuscles.

The golden hue of the brain substance and membranes, as well as that of the tissues generally, is due to the presence of the coloring matter of the bile, and not to the escape of hæmatin from the blood vessels. When death occurs after profuse hæmorrhages from the stomach and bowels, the cerebral structures present less evidences of congestion than when these symptoms have been absent or present to a small degree.

It is probable that the cerebral ganglia and commissures, as well as those of the spinal cord and sympathetic nervous system are affected with the same chain of chemical reactions which result in the formation and accumulation of oil in the blood and in the heart, liver and kidneys. In this connection, the recent observation of Dr. H. D. Schmidt, during the yellow fever of 1878, in the Charity Hospital of New Orleans are of interest, in that they sustain the view that the accumulation of oil is not confined exclusively to the liver, heart and kidneys.

Dr. Schmidt affirms that he has observed fatty degeneration of the nuclei in the walls of the minute vessels of the pia mater vennles, as well as arterioles. In many vessels the nuclei have disappeared, leaving a number of fat globules in their places; others are met with in which an increase of the mere trace of protoplasm, surrounding the nucleus in the normal condition has taken place, causing a thickening of the wall of the vessels. "With reference to the brain, the most prominent observation thus far made is the existence of fatty degeneration of the blood vessels of the cortex-cerebri, similar to that observed in the vessels of the pia mater,

MALARIAL FEVER.

falling short of the usual amount. Blood vessels of the brain generally filled with blood. The structures of the brain appeared in acute cases, as a general rule, to be unaltered either in structure or appearance; in chronic cases the nervous structures sometimes presented a deeper and more grayish color, from the presence of pigment granules.

The structures of the brain and spinal cord, in malarial fever, were, therefore, as a general rule, altered neither in consistence or appearance, and the same is true also with reference to the sympathetic nervous system.

The rapidity with which the symptoms of cerebral disturbance, such as coma and delirium vanish under appropriate treatment, in many cases, render it evident that the congestion of the cerebro spinal system is temporary and unattended with structural alterations. When death occurs in coma, the blood vessels of the brain, even to their minutest ramifications, are distended with blood, such congestion being not merely evident to the naked eye, but also more fully shown under the microscope, when thin sections are made of the brain structures. The ventricles of the brain are also filled with serum, often of a golden color. The paralysis which sometimes results from a paroxysm of malarial fever, may be due to several causes, as the actual rupture of blood vessels and the effusion of blood, the detachment of a fibrinous clot, and the obstruction of some one of the arteries of the brain, and the impaction of some of the minute capillaries by pigment granules. Occasionally in cases of chronic malarial poisoning, attended with a watery condition of the blood, coma, with dilated pupils, sometimes supervenes suddenly, and in such cases, I have found the ventricles to be greatly distended with serous fluid, which by its pressure had caused the cerebral symptoms.

YELLOW FEVER.

ogether with degeneration of the gang-ionic bodies of the cortex."

If these observations should be confirmed y farther research and especially by chem-al analysis, determining the exact pro-ortion of oil in the brain in health and arious diseased states, it will thus be nown that the nervous system both erebro-spinal and sympathetic, is involved a similar series of changes as the other rgans. The universality of these changes oint to the blood as the great medium and ource of the chemical actions, and we have confirmation of this view in the fact hich I have determined by chemical ana-sis, that the oleaginous constituents are reatly increased in the blood of yellow ver.

That the mere presence of oil in increased nounts in certain organs, during yellow ver is not the *cause* of the gravest symp-ms, is evident from the rapidity of the nvalescence in many cases; and also om the well known fact that in many ses the general health is greatly improved an attack of yellow fever.

The grave symptoms of this disease must sought not merely in the structural erations of certain organs, but in the tial chemical changes induced by the ison, which precede the final lesions coverable after death.

MALARIAL FEVER.

HEART.—Normal in color, presents the deep purplish red muscular appearance of the healthy heart. Muscular fibres of the heart firm and of normal appearance under the microsope. No deposits of oil in the muscular structures.

Cavities of the heart frequently distended with dark blood. Firm laminated fibrinous concretions very common; and in some cases of pernicious fever, the formation of these heart-clots during the cold stage without doubt causes death, and renders unavailing the action of remedial agents.

The fibrinous concretions are not only attached to the carnæ columnæ and chordæ tendinæ and auriculo-ventricular valves, but they also frequently send forth long branches into the pulmonary arteries. The formation of these concretions is rare in yellow fever, and when formed they are much smaller and softer than in malarial fever. The blood of malarial fever contains more fibrin, fewer colored corpuscles, and changes more slowly to the arterial hue, upon exposure to the atmosphere, than the blood of yellow fever.

In malarial fever the heart does not, as in yellow fever, undergo fatty degeneration. We do not by any means wish to be understood as affirming that fatty degeneration of the heart is characteristic of yellow fever in contradistinction to all other

HEART.--Pale yellow and brownish yellow if undergoing fatty degeneration; structures of heart flabby and somewhat softened; numerous oil globules deposited within and around the muscular fibrillæ of the heart. The appearance of the heart in a case of yellow fever (Edward Griffin, who died in the Charity Hospital, of yellow fever, November 9, 1876, on the sixth day of the disease, after the ejection of large quantities of black vomit, is represented in Plate 7, Figure 20. The following is the record of temperature, pulse and respiration in this case: November 5, temperature, 104°; November 6, temperature, morning, 105°; evening 104.5°; pulse, morning 108; evening 120; respiration, morning 27; evening 24. November 7: temperature, morning 103°; evening 103°; pulse, morning 86; evening 120; respiration, morning 28; evening 20. November 8: temperature, morning 102°; evening 100.5°; pulse, morning 100; evening 120; respiration, morning 29; evening 24; profuse black vomit. November 9: morning, temperature 97.5; pulse, 120; resperation, 40; death. Heart yellow and softened. Under the microscope, transverse markings of muscular fibres indistinct and filled with oil and granular matter deposited between and around the muscular fibres. The appearance of the muscular fibres of this heart are represented in Plate 7, Figure 21,

YELLOW FEVER.

1000 parts of the muscular structure of the heart, contained water, 786.44; solid matter, muscular fibres, etc., exclusive of oil, 267.06; oil, 46.50.

In this case the left ventricle was dilated and hypertrophied, but this condition appeared not to have affected the health of the patient before the advent of fever. In the case of Samuel Kinsley, aged 23, who entered the Charity Hospital November 14th, 1873, on the fourth day of yellow fever, the temperature, pulse and respiration were as follows: November 14th, temperature 104.8°, pulse 104, respiration 40. November 15th, temperature 105.6°, pulse 100, respiration 32; p. m, temperature 106°; pulse 112. respiration 32. November 16, temperatute exilla 105.6°, pulse 96, respiration 36; p. m., temperature 105.9°, pulse 102 respiration 30. November 17, a. m., temperature 102° and pulse 104; respiration 32, threw up black vomit on sixteenth and seventeenth. Died 1 o'clock p. m., November 17, on eighth day of disease.

The autopsy was made eight hours after death. Weight of heart 9 Troy ounces. Great congestion of blood vessels of pericardium, resembling the appearance of the pericardium of a case of yellow fever which died on the sixth day of the disease August 5, 1871, represented in Plate 7, Figure 18. Blood vessels of the heart distended with dark-colored blood. Cavities of the heart contained almost three fluid ounces of blood, and golden yellow clots. Vena-cara and pulmonary veins filled with fluid blood. When washed the muscular structures of the heart, presented a distinct yellow color, similar to that of the heart delineated in Plate 7, Figure 20, and was readily mashed between the fingers; under the microscope the muscular fibrillæ presented indistinct transverse striæ, and contained numerous oil globules and much yellow granular matter, resembling the fibres of the heart of a case of yellow fever depicted in Plate 7, Figure 21. One thousand parts of the muscular structure of the heart contained, water 736.65; solid matter, exclusive of oleaginous matters, 186.8; oil, (fat) 76.59. In the preceding case, oil or fat in abnormal quantities was present in the muscular structures of the heart, the fat being deposited within and around the muscular fibrillæ in the form of minute globules of various sizes. There is also an obliteration or degeneration of the muscular fibrillæ of the heart leading to a disappearance of the muscular striæ. The removal of the particles of oil, from the muscular structures of the heart by sulphuric ether, did not restore the obliterated striæ, neither did this agent remove all the molecular particles, a portion at least being insoluble in ether, alcohol and chloroform, and having an analogous constitution to albumen and fibrin.

It would without doubt be a matter of

MALARIAL FEVER.

diseases; but only as distinguishing this disease from the various forms of malarial, paroxysmal or paludal fever.

By quantitative analysis of microscopical examination, I have demonstrated:

1. Yellow fever is characterized by acute fatty degeneration of the muscular fibres the heart.

2. The fat or oil is far more abundant in the yellow fever heart than in the healthy heart.

3. Fatty degeneration of the heart is not the sole state of this organ in yellow fever; a molecular change has taken place in the substance of the muscular fibres, and this change affects the albuminous or nitrogenous constituents and most probably represents one of the stages in the acute fatty degeneration. We do not by any means wish to be understood as affirming that fatty degeneration of the heart is characteristic of yellow fever, in contradistinction to all other diseases: but only as distinguishing this disease from the various forms or malarial paroxysmal or paludal fever. In the first cases of fever which occur in those seasons, and in those towns and cities in which yellow fever prevails, it is all important that the heart should be subjected to careful microscopical and chemical examination, in order that a correct diagnosis should be formed and malarial fever clearly distinguished from specific yellow fever. Of course, all other phenomena and lesions upon which a correct diagnosis may be based should be carefully observed, and recorded in those cases by which it is sought to determine the true characters of an epidemic in its earliest manifestation. Softening of the substance of the heart has been observed to occur in certain asthenic states of the system, in which there is loss of power or tone in the entire muscular system; this atony originating from a diffluent or otherwise depraved condition of the blood, itself one of the most important varieties of this morbid lesion, is that which so often occurs in typhus and other low fevers.

I have shown by a number of observations recorded in the Medical Memoirs of the United States Sanitary Commission, that fatty degeneration of the heart characterized the scorbutic state of the prisoners at Andersonville, Georgia, manifested by petechiæ, intermuscular hæmorrhages, swollen ulcerated gums, uncontrolable diarrhœa, and dysentery and foul gangrenous ulcers.

As far as my experience extends, it corresponds with that of the learned P. M. Latham, M. D., contained in his valuable "Lectures on subjects connected with Clinical Medicine, comprising Diseases of the Heart;" and I have been convinced by numerous facts, that the softened heart of yellow fever, as well as of scurvy and typhoid fever, is gradually but fully restored

YELLOW FEVER.

great interest to medical science, to establish clearly the exact physical and chemical changes which result in the final transformation of the muscular structure of the heart, and the secretory and excretory structures of the liver and kidney into fat. The difficulties of such an investigation are very great, especially as the chemical research can be commenced only in fatal cases and after death. The complete investigation of this subject should embrace the following inquires :

1. Is there an actual increase of the entire amount of fat in the blood, organs and textures in yellow fever ?

2. Is there any movement of the fatty matters from the positions in which they are chiefly accumulated in health, as in the adipose tissue, the marrow of the bones, the brain, spinal cord, and nerves generally during the fibrile stage of yellow fever ?

3. Are the heart, liver and kidneys simply infiltrated with fat conveyed by the blood during the fever ?

4. Is there an actual conversion of the fibrin and albumen of the blood, and the albuminous elements of the heart ?

5. Does the accumulation of fat in certain organs in this disease, result from chemical changes directly excited by a specific poison, or from imperfect oxidization and perverted nutrition ? .

6. Has the perversion and arrest of the function of the liver, and the retention in the blood of the constituents of the bile any relationship to the deposit of fat in the various organs ?

As the acute fatty degeneration of yellow fever is in no wise dependent upon the food of the patient during the fever, the change occurring with rapidly during absolute starvation, it is evident that the only possible sources of the oil or fat are those indicated in the preceding inquiries; namely the pre existing sources of fat or its transformation of the nitrogenous and albuminous constituents of the blood and organs. The cavities of the heart in many cases filled with dark fluid blood; yellow fibrinous clots sometimes present. Blood contains normal amounts of urea and extractive matters and ammonia. Fibrin of blood greatly diminished in amount.

I have determined, both by *chemical* analysis and microscopical examination, that the heart undergoes fatty degeneration in yellow fever. As far as my observations have extended, the heart undergoes more rapid and extensive degeneration in yellow fever than in any other acute disease. The acute fatty degeneration of the heart in yellow fever should not be confounded with similar changes observed in spirit drinkers and in certain chronic diseases, but is mo[illegible] probably dependent upon the same or simi[illegible] chemical actions, as those leading to a similar result in phosphorus poisoning and [illegible]

MALARIAL FEVER.

to its normal condition, in the vast majority of cases which recover.

It is true, however, that the softening (acute fatty degeneration) of the heart in yellow fever, is fraught with danger, and may be the cause of sudden death, both during the period of calm and during that of convalescence. Hence, we have deduced the important indication of treatment to *preserve the yellow fever* patient at rest and in the recumbent position. Imprudence in rising out of bed, and in attempting to move about, both during the active stages of the disease, and during convalescence, has been attended with rapid failure of the enfeebled heart, and sudden death.

Whilst holding that this softening or acute fatty degeneration of the heart to be one of the most marked and special effects of yellow fever, and while admitting with Dr. Stokes, that its diagnostic signs are the impulse of the ventricles becoming almost or altogether imperceptible, and the systolic sound at the same time almost or altogether inaudible; at the same time such are the lesions of the stomach, kidneys and liver in yellow fever, that in many cases it is difficult, if not impossible, to apply the precise and plain indications for the use of stimulants in fever, as deduced by Dr. Stokes from these ausculatory signs.

After careful microscopical and chemical examination of the heart, in the various forms of intermittent, remittent, congestive or pernicious malarial fever, and malarial hæmaturia, I have never observed any increase in the normal amount of fat or any condition which could be designated as molecular change, or acute fatty degeneration. If the heart be compared in malarial and yellow fever, it will be possible to distinguish by the naked eye, the flabby, softened, yellowish and brownish-yellow hue of the latter, from the dense, firm, dark colored heart of the former disease. All doubts are immediately removed by the chemical and microscopical examination, the malarial heart presenting no accumulation of oil, and revealing a firm, normal, distinctly striated structure of the muscular fibrillæ. If acute fatty degeneration of the heart was characteristic of malarial fever, from the almost universal prevalence of this disease in the Mississippi valley, and other portions of the Southern and Western States, and from the oft recurrence of the disease in the same indivdual, fatty degeneration of the heart would become one of the common diseases in malarial regions. Pericardium not specially congested. In some cases pericardial fluid of clear straw color, in others, especially when jaundice has existed, the pericardial fluid is of a golden color.

YELLOW FEVER.

In yellow fever the fat is deposited within and around the muscular fibrillæ of the heart, in the form of minute globules of various sizes. There is also an alteration or degeneration of the muscular fibrillæ of the heart, leading to a disappearance of the striation. The removal of the particles of oil from the muscular structures of the heart by sulphuric ether does not restore the obliterated striæ; neither does this agent remove all the molecular particles, a portion at least being insoluble in ether, alcohol and chloroform, and having an analogous constitution to albumen and fibrin.

Fatty degeneration of the heart, therefore, is not the sole state of this organ in yellow fever; a molecular change has taken place in the substance of the muscular fibres, and this change affects the albuminoid or nitrogenous constituents, and most probably represents one of the stages of acute fatty degeneration.

The pericardium in yellow fever presents a congested appearance. Under the microscope the minute blood-vessels appear to be injected with colored blood corpuscles. Pericardial fluid of deep yellow color. The appearance presented by the pericardium of the heart of a case of yellow fever which terminated fatally in New Orleans, August 5th, 1871, is represented in Plate 7, figure 18. The pericardium was put on glass slide and preserved in Canada balsam. The drawing represents the natural appearance as injected with blood.

LUNGS.—Dependent portions greatly congested; otherwise normal. In some cases circumscribed effusions of blood in textures of lungs.

I have in a few instances observed pneumonia as a supervening disease in yellow fever; in such cases the sputa consisted of almost pure blood. The supervention of pneumonia causes a continuation of the febrile phenomena beyond the usual period of the uncomplicated disease.

STOMACH.—Mucous membrane of stomach in many cases intensely congested, softened and eroded. Stomach often contains large quantities of black vomit. Reaction of black vomit often *alkaline* from the presence of *ammonia*, resulting from the decomposition of *urea*, eliminated by the gastro-intestinal mucous membrane. *Ammonia* and *urea* present in the black vomit ejected during life and also when examined almost immediately after death. The presence of ammonia in the stomach and black vomit was not the result of post-mortem putrefac-

MALARIAL FEVER.

LUNGS.—Dependent portions congested with blood; otherwise healty.

Owing to the effects of the malarial poison in decreasing the fibrinous element of the blood and the colored corpuscles, pneumonia engrafted upon an individual suffering with malarial fever, tends to spread by diffusive inflammation, and in the case of pleuritis as a supervening disease, the effusion into the pleural cavity is rapid and destructive in its effects. If pneumonia be complicated with malarial fever, the periods of congestion of the lungs, attended with oppressed breathing and increase of pulmonic inflamation are periodic and may be to a certain extent controlled by quinine.

STOMACH.—Mucous membrane often presents a normal appearance; sometimes ecchymosed; rarely inflamed or softened; sometimes discolored with bile; rarely contains black vomit (altered blood). Reaction of mucous membrane of stomach and intestines acid. The pathological alterations of the stomach, observed after death, do not correspond, as a general rule, with the severity of the symptoms, the vomiting and pain on pressure during the progress of the fever. The injection of the blood vessels, and the mottled, purplish

YELLOW FEVER.

tive changes. In many cases ammonia was present in such large amount, that when a rod, dipped in hydrochloric acid, was held over the mucous membrane of the stomach, or over the black vomit, dense fumes of chloride of ammonium were formed, as if the rod had been held over a bottle containing liquor ammoniæ. Chemical analysis revealed the presence of ammonia and also of urea in the black vomit. Under the microscope the black vomit was seen to contain colored blood corpuscles, and cells of the mucous membrane of the stomach, and broken capillaries. In some cases vibrios and fungi were numerous in the black vomit; in others they were absent.

That the stomach suffers, and suffers severely in yellow fever is evident from the fact, that in a great majority of cases the stomach is finely injected with blood, and exhibits even when examined immediately after death, abrasions of the tissue in pit-like holes and furrows. In some cases the whole surface of the stomach is affected, in others the effusion and injection is confined to the cardiac or pyloric portion, but in some rare instances the stomach, duodenum and intestines have been said to present an almost entire absence of appreciable lesions. I have not myself in post-mortem examinations observed the absence of lesions in the gastro intestinal mucous membrane. The congestion of the stomach is to a certain extent due to the disturbance of the circulation in the liver, but not wholly to this cause; we must from careful chemical and microscopical examinations, admit the existence of irritation, desquamation and hæmorrhage.

The congested appearance of the mucous membrane of the stomach after death from yellow fever, is represented in Plate No. 8, figure 22, mucous membrane of stomach in yellow fever, Charity Hospital, October, 1871.

Figure 23, mucous membrane of stomach in yellow fever, Griffin Charity Hospital, November, 1876.

These illustrations must be regarded as exhibiting the extreme conditions of congestion in the mucous membrane of the stomach in yellow fever. In many cases, the stomach after death presents less congestion, and in some portions of the mucous membrane shows different degrees of congestion; the congestion being greater in some portions of the stomach than in others.

INTESTINES.—As a general rule dark-colored and distended with gas. In some cases the reaction of the intestinal contents was strongly alkaline from the presence of ammonia.

Hæmorrhage from the intestinal mucous membrane has been observed during life, and in such cases, as well as in others in

MALARIAL FEVER.

brownish red color, after death, appear to be indicative, not of inflammation, but rather of stagnation and accumulation of the blood in the capillaries, consequent upon the disturbance of the relations of the blood to the capillaries. The distressing vomiting, so often a troublesome symptom in malarial fever, appears to depend upon the contact of the altered bile and the irritation of the nervous centres which supply the stomach with nervous force, by the altered blood, and by the malarial poison.

In cases where there has been chronic inflammation of the stomach before the appearance of the fever, and in cases of long standing, where the solids and fluids were permanently altered, decided lesions of structure were found in the stomach. It may be asserted, however, that there is no constant or characteristic lesion of the stomach in malarial fever.

The vomited matters in the various forms of malarial fever, unlike those of yellow fever, contain bile. Even in that form of malarial fever which most nearly resembles yellow fever, namely: in malarial hæmaturia, the dark, almost black vomit, owes its color chiefly to altered bile. It is true that in some cases of malignant malarial fever, we may have the vomiting of dark blood and bloody matter, resembling the *vomito nigra* of yellow fever, but as a general rule bile is present, even in these rare instances, whilst it is almost always absent from the black vomit of yellow fever. The presence of blood and its constituents, occasionally, in the vomit of malarial fever is due to the same causes, namely: desquamation rupture of capillaries, and the transudation of the hæmoglobin of the colored corpuscles.

INTESTINES.—These remarks relating to the stomach apply also to the small intestines. The mucous membrane frequently presented a purplish, irregularly injected, mottled appearance, especially after the administration of purgatives, and it was frequently observed that the injection of the blood-vessels was greatest in the de-

YELLOW FEVER.

which no blood has been discharged previous to death, the intestines have been found upon post-mortem examination distended with blood, A remarkable feature in yellow fever is the frequent occurrence of intussusception of the small intestines. The late Professor John Harrison, M. D., states that intussusceptions of the small intestines were exceedingly common in autopsies made in 1839, in New Orleans. The quantity of intestines invaginated, sometimes exceeded a yard. The large intestines and the lower portion of the small, are not so often found congested, as the stomach and duodenum, yet such a condition is by no means rare. The congestion of the veins, venules, and mucous membranes generally of the intestines in yellow fever, have been referred to the anatomical distribution of the veins, which like those of the stomach, are tributaries to the portal vein. But we have been inclined in many cases to regard the congestion as active and not passive. During life the rectum in yellow fever presents an intensely red, and congested appearance, and some cases of yellow fever in 1878, were followed by irritation and fissure of the rectum.

MALARIAL FEVER.

pendent portion of the intestines. In several cases, Brunner's glands in the duodenum were enlarged and distinct. Peyer's glands were uniformly free from any well-marked morbid alteration. In some cases they were distinct and well defined in their outline, and presented a honeycomb surface, dotted with dark points; but they were always free from marks of inflammation and even of irritation, and in their pale, white color, contrasted strongly with the surrounding mucous membrane, discolored with bile and often irregularly injected with blood.

As a general rule, bile is found in the intestinal canal of malarial fever, and in some cases in large quantities, whilst it is absent from the entire alimentary tract in fatal cases of yellow fever.

LIVER.—Yellow color and bloodless, resembling this organ in fatty degeration, but firmer and denser in structure. Plate 9, figure 29, represent the general appearance of the yellow fever liver. The specimen was taken from a subject in the Charity Hospital in 1871. Plate 10, figure 35, illustrates the appearance of the liver in the case of cirrhosis, induced by spirit drinking, which died in the Savannah Hospital in 1856. There was not only cirrhosis but also fatty degeneration in this case. Plate 9, figure 30, represents the appearance of liver in yellow fever engrafted on malarial fever; figure 31, represent a portion of section of liver figured in 30, magnified, showing congestion of portal capillares, with pigment deposit, and the yellow, fatty and degenerated central portions of the lobuli of the liver.

Figure 32, represents the appearance of the liver in yellow fever engrafted upon malarial fever. The black pigmentary matter alters the yellow color characteristic of the yellow fever liver. Figures 29, 30, 31 and 32, Plate 9, should be compared with figure 35, Plate 10, and with Plate 11, figure 41, liver in acute stage of malarial fever (bilious remittent). Figure 42, appearance of liver in malarial fever of long standing; figure 43, appearance of malarial liver loaded with pigment particles. Under the microscope, textures of the liver infiltrated with oil; secretory cells of liver contain much oil. The liver of uncomplicated yellow fever, as far as my observations extend, and according to the observations of

LIVER.—The weight of the liver is increased in malarial fever above the standard of health. This increase of weight is due in part to the stagnation and accumulation of blood in the capillaries and blood-vessels, and to the deposit of pigment matter in the structures of the liver. This observation applies to the liver in the acute stages.

In all the different forms of malarial fever, intermittent, remittent and congestive, which had continued longer than five days, and in which there had been no previous alterations of the structures, as in cirrhosis and fatty degeneration, I found the exterior of a slate color, and the interior of a bronze color. Plate 11, Figure 41, represents the appearance of the malarial liver, in the acute stage of remittent fever. Plate 42, represents the dark bronzed liver of malarial fever of long standing. Figure 43, represents liver of malarial fever loaded with pigment particles, figure 44, represents a magnified portion of a section of a malarial fever liver, showing the deposit of pigment chiefly in the portal capillaries, in the periphery of each lobule. Figure 45, represents the appearance of the liver cells and blood and bronzed pigmentary matter of the liver in malarial fever. This figure 45, should be compared with figure 33. Plate 9 showing cells of liver and oil globules in yellow fever. In that form of cirrhosis of the liver which is directly induced by the prolonged action of the malarial poison, the liver is in like manner of a slate color upon the exterior, and olive green within,

YELLOW FEVER.

Louis and many others, is of a bright yellow color. It is probable that this color, as in the case of the malarial liver, varies with the length of the attack and the effects of previous diseases. Thus Dr. Samuel Jackson, of Philadelphia, found the livers of those who had died in the early stages engorged with blood. The decoction of the yellow fever liver is of a golden yellow color, whilst that of the malarial liver is of a brownish yellow color. The golden yellow color of the yellow fever liver can be extracted both by alcohol and water. The yellow fever liver is firmer and harder than that of malarial fever, contains much less blood, and is much less readily acted upon by liquor potassæ and acids. Liquor potassæ readily dissolves the malarial fever liver, the decoction presents the appearance of venous blood, while no such effect is produced by the action of this alkaline solution upon the yellow fever liver.

Chemical analysis reveals the presence of urea and fat in abnormol amounts; animal starch and grape sugar are also present in the yellow fever liver. As a general rule grape sugar is absent from the malarial liver.

In some cases the deposit of oil is confined to certain portions of the lobuli and may even differ in amount in different portions of the liver, but in the majority of cases the fatty infiltration, and fatty degeneration of the protoplasm of the hepatic cells, extends throughout the whole organ. The oil is deposited both within and around the hepatic cells. Plate 9, Figure 33, gives the appearance of the hepatic cells and the oil globules in the liver of yellow fever case of Griffin, November, 1876. This figure should be compared with Fgure 45, Plate 11, representing the appearance of the hepatic cells and pigment particles in the liver of malarial fever.

The liver of Griffin, figured in Plate 9, Figure 30, Figure 31 and Figure 33 (a case of yellow fever engrafted on malarial fever) upon a superficial examination presented a purplish, congested appearance. Thin sections of this liver made with Valentin's knife, placed under the microscope, showed that each lobule consisted of an exterior portal peripheral border of deep red, with dark granular masses, illustrating the effects of preceding attacks of malarial fever, with the internal portions surrounding the hepatic capillaries, and being composed of hepatic cells loaded with oil globules, also granular matter and oil globules within and around the cells and intercellular spaces. See Figure 30 and Figure 31, Plate 9. Upon analysis this liver contained in the 1000 parts: water, 747.88; solid matters, exclusive of oil, 162.95; oil (fatty matters), 89.17.

In the case of Samuel Kinsly, who died of yellow fever in the Charity Hospital,

MALARIAL FEVER.

and loaded with dark pigment granules. The change in the color appears to be very persistent, and in several cases I have observed the liver to retain shades of light slate and light bronze several weeks, and even months, after the relief of the attack of malarial fever, the patients having been destroyed by other diseases or by violence. The liver, especially in the peripheral portions of the lobules, contains pigment granules, resulting from the alteration of the colored blood-corpuscles and the hæmatin. The pigment granules are frequently distributed uniformly through both the portal and hepatic systems of capillaries. There is no accumulation of oil globules, as in the yellow fever liver. If malarial fever precedes or succeeds yellow fever, the liver may contain both oil globules and pigment granules.

The peculiar color of the malarial liver can to a certain extent be extracted by boiling water, and the filtered decoction presents a brownish mahogany color, from the presence of the dark coloring matters of the pigment granules; the decoction of the yellow fever liver, on the other hand, presents a golden color. The blood issuing from the cut surface of the malarial liver presents a dark purplish hue, and does not change to a brilliant scarlet, as in the yellow fever liver. Upon chemical examination, the malarial liver contains animal starch, but no grape sugar; the yellow fever liver contains both substances.

Whilst, by careful analysis (quantitative), I have shown that the oil may amount to over 40 per cent of the dried yellow fever liver, I have also clearly demonstrated that there is no increase of oil in the malarial liver.

I speak of uncomplicated malarial fever; of course, when this disease is engrafted upon cirrhosis or fatty liver, the effects of the malarial poison upon this organ will be marked.

YELLOW FEVER.

November 17, 1873, the liver presented a mottled yellow and bronze color, as in Figure 32, Plate 9. Sections of this liver, washed with a stream of water, presented the yellow color of yellow fever. The liver cells were filled with oil globules; oil globules, in great numbers, were also found around the liver cells. The liver also contained much granular matter. Minute sections of the liver, made by Valentin's double knife, exhibited the hepatic cells filled with globules of oil or fatty matter, the outline and hexagonal shape of the cells being altered and obscured, and the nuclei rendered invisible. When matter was scraped from the hepatic texture and spread upon a glass slide, the whole field of the microscope, and the intespaces between the cells were filled with granular, molecular and oily matter. 1000 parts of this liver contained: water, 677.20; golden yellow oil, 304.21; fibrous tissue, blood-vessels, etc., 18.59. We observed great increase of oil. Careful investigation of the relations of malaria to yellow fever, and an extended examination of the statements of various observers, have convinced me that the apparent contradictory statements made by various observers, as to the presence or absence of the yellow color of the liver, which Louis regarded truthfully as the characteristic lesion of the disease, has arisen from two sources, namely, errors of diagnosis, and failure to detect the preceding and concurrent, and subsequent action of malaria upon this organ. In uncomplicated yellow fever, the pigment particles so uniformly present in the malarial liver are entirely absent. When yellow fever has been engrafted on malarial fever, the preceding changes wrought by the paludal poison alter and mask those developed by the yellow fever. And hence a mingling of the yellow color of acute fatty degeneration with the dark bronze and slate of the malarial liver, may produce a color very closely resembling the Spanish brown of the healthy liver. Careful sections and examinations of the organs under the microscope will reveal both the oil globules end the pigment particles.

GALL BLADDER.—The gall bladder in yellow fever is, as a general rule, contracted, flaccid, small, and contains little or no bile. The amount of bile generally does not exceed 100 grains. In malarial fever, on the other hand, the gall bladder is, as a general rule, distended with dark, greenish black bile. In yellow fever the vomiting is rarely bilious, unless in the commencement of the disease, and the black vomit contains little or no biliary matter.

The small intestines are rarely, if ever, discolored by bile in yellow fever, whilst in malarial fever it is common to find the gastro-intestinal mucous membrane discolored by bile.

MALARIAL FEVER.

GALL BLADDER.—In most cases distended with more than 1000 grains of thick, greenish black bile, having frequently a specific gravity ranging from 1.030 to 1.037. The bile is more abundant in malarial fever, and is of a deeper color than in yellow fever, and frequently contains concretions of epithelial cells, from the coats of the gall bladder and biliary ducts, and casts of the biliary tubes. In thin layers, and when added to water, itpresents a deeper shade of green. The yellow fever bile presents a golden color in thin layers and when added to water.

Whilst hæmorrhage occasionally occurs in the gall bladder in yellow fever, I have

YELLOW FEVER.

I have observed cases in which the gall bladder contained only a serous liquid coagulable by heat. In two cases, a decided hæmorrhage had taken place into the gall bladder, which was distended with black blood. The bile in yellow fever contained numerous cells from the mucus membrane of the gall bladder, and casts of the hepatic ducts.

Spleen.—As a general rule, but slightly enlarged. In many cases, normal in size and appearance. In many cases of yellow fever the spleen is neither enlarged nor softened, nor altered in appearance, either upon the exterior or within. There appears to be no special alteration or destruction of the colored corpuscles in the spleen of yellow fever, as in that of malarial fever. The enlargement of the spleen in fevers, does not, from these observations, depend upon the diminution of the fibrin, because this element of the blood is diminished to a much greater extent in yellow fever than in malarial fever, and at the same time the spleen is enlarged to a greater and more marked degree in the latter. Another fact worthy of consideration in this connection, is, that in yellow fever, the blood corpuscles are not specially diminished in amount, whilst in malarial fever they are rapidly destroyed, and this destruction appears to be greatest in the liver and spleen. In malarial fever both these organs are loaded with the altered blood corpuscles, and with the pigment granules resulting from the alterations of the colored corpuscles, whilst neither the spleen nor the liver in yellow fever affords any evidence of alteration of the colored blood corpuscles.

Supra-Renal Bodies.—These bodies appear to be subjected to similar changes with the liver and heart, and oil is increased in amount in the cells of the cortical and medullary substance.

Kidneys.—These organs, as a general rule, present a brownish-yellow color, much lighter than that of health. They, in common with the heart and liver, contain much free fat.

MALARIAL FEVER.

never witnessed this remarkable condition in malarial fever; neither have I ever observed the entire absence of bile and the replacement of this secretion by an albuminous fluid in malarial fever.

Spleen.—Enlarged, softened and loaded with altered blood corpuscles and pigment granules; of a dark slate color upon the exterior; the blood of the spleen does not change to the arterial hue upon exposure to the atmosphere. In many cases the spleen is so soft that it ruptures when the attempt is made to remove it from the cavity.

When the splenic mud is subjected to microscopical examination, it is found to contain numerous pigment granules of various sizes. and pigment cells, many of which resemble the colorless corpuscles in size, whilst others are much larger and contain oval nuclei and resemble certain palmellæ.

Plate 12, figure 48, represents the appearance of the spleen in malarial fever.

The figure is only one-fourth the size of the spleen from which the drawing was made.

Figure 47 represents the appearance of spleen (section) in a case of pyæmia, following hospital gangrene.

The deposits characteristic of pyæmia is well shown in the central yellow mass. The deposits were yellow and cheese-like, which, under the microscope, consisted of numerous cells, some of which were caudate and spindle shaped, also numerous granules and oil globules. (See Surgical Memoirs of the U. S. Sanitary Commission, p. 415.

Plate 12, figure 49, represents the microscopical appearance of the splenic mud of malarial fever.

Figure 50. Splenic mud of pernicious malarial fever.

Plate 9, figure 34, represents the appearance of the splenic mud in a case of yellow fever engrafted on malarial fever. E. Griffin, 1876.

Supra-Renal Bodies.—Frequently discolored of a dark brownish hue, from the deposits of melanotic or pigment particles, around the cortical and medullary cells and capillaries.

No accumulation of oil has been observed in these bodies in malarial fever.

Kidneys.—Normal in appearance and structure, except in malarial hæmaturia, when the textures are congested and dark colored in some cases. Occasionally slate colored spots appear upon portions of the kidneys.

YELLOW FEVER.

Plate 10, figure 36, represents the appearance of the kidney in yellow fever; and figure 37 represents the appearance presented by a section of the same kidney.

These figures may be regarded as representing the more decidedly marked kidneys in this disease; for in some cases they present greater degrees of congestion, and deeper coloration from the presence of blood in the capillaries.

In the case of Griffin, who died of yellow fever in the Charity Hospital, November 17, 1876, sections of the kidneys, made with Valentin's knife, revealed, under the microscope, increase of oil globules and granular matter. Many of the tubuli uriniferi presented a thickened and altered appearance, as if undergoing the changes characteristic of cirrhosis.

One thousand parts of the kidney contained, water, 800.33; solid excretory volicular and fibrinous matter, 158.39; oil or fat, 40.88.

In the case of Samuel Kinsley, who died of yellow fever, in the Charity Hospital, on November 17. Sections of the kidneys under the microscope presented the appearance usual in yellow fever, namely: Malpighian corpuscles and tubuli uriniferi, filled with oil globules, yellow granular matter, and detached excretory cells. One thousand parts of those kidneys contained, water, 789,9; golden colored oil and fat, 57.07; cellular tissue, blood vessels, excretory sturctures, etc., 142.99.

When thin sections of the kidneys are examined under the microscope, the Malpighian corpuscles and tubuli uriniferi are found to be filled with granular albuminoid and fibroid matter, excretory cells detached and oil globules. As far as my observation extends, these structural alterations of the kidney have escaped the notice of preceding observers. The importance of these changes in the kidneys cannot be over-estimated, for upon them apparently depends the suppression of the urinary excretion, which is an almost universally fatal symptom. The changes in the kidneys may depend upon several causes, amongst which may be mentioned as of prime importance, the alterations induced in the albumen and fibrin of the blood by the febrile poison, and the congestion of the capillaries induced by derangement of the vaso-motor system of nerves and by the altered blood.

This condition of the kidneys is preceded by capillary congestion, as has been shown by the results of post-mortem examinations at different periods of the disease. The same observation applies to the liver. The fatty degeneration and structural lesions are preceded by hyperæmia; but neither in the kidneys nor in the liver and other organs, can the mere stagnation of the blood in the capillaries be regarded as the

MALARIAL FEVER.

I have, by careful clinical studies, and by analysis of the urine, at different stages of malarial hæmaturia, established the fact that many of the symptoms of this disease, as well as the fatal termination, are connected with the progressive failure of the kidneys to eliminate the constituents of the urine and of the bile.

When sections were made of the kidneys of those who had died in the acute stages of malarial hæmaturia, the cortical and medullary portions presented a deep purplish red and bloody appearance. The color was deeper in some portions than others, resembling circumscribed effusions of dark blood. In many cases all portions of the kidneys were altered in appearance, and the tubuli uriniferi especially at the termination of the pyramids could be seen resembling dark red lines of coagulated blood. Microscopical examination of sections with Valentin's knife, revealed the fact, that many of the tubuli uriniferi throughout their entire extent, were filled with coagulated blood. The hæmorrhage appears to have taken place through the malpighian corpusches chiefly; little or no blood was effused around the tubuli uriniferi. It would appear that during the prolonged cold stage, the kidneys become in this form of malarial fever, congested, in a manner similar to what occurs in the spleen. During this congestion, rupture of the blood-vessels and of the capsular membrane of the malpighian corpuscles occurs; such rupture being mainly due to their anatomical structure, and the greater tension of the blood in this portion of the renal capillary circulation. When from any cause the blood coagulates in the tubuli uriniferi, their function as excretory tubes is destroyed, and the extent of the imapirment of the execretory function of the kidneys, will depend upon the number of excretory tubes blocked up by coagulated blood. The grand cause of the severe, dangerous and often fatal character of malarial hæmaturia will be found chiefly in these structural alterations of the kidneys.

Plate 13, figure 55, represents the appearance of a section of the kidney in malarial hæmaturia, figure 56, represents the apperaance of the extremity of a pyramid of a kidney of malarial hæmaturia viewed under one inch objective.

The following is our outline of the case of malarial hæmaturia from which the illustrations, figures 55 and 56 were taken: George Price, native of Louisville, Ky., aged, 26; height, 6 feet ½ inch; weight in health 170 pounds; occupation, laborer; during the months of August, September and October, 1877, visited my office several times, and appeared to be suffering from the prolonged effects of the malarial poison; pale sallow, greenish yellow hue. As he was sick and destitute I furnished him with

YELLOW FEVER.

prime cause of the subsequent degeneration and disintegration of the textures, and more especially of the secretory cells. The chief cause is the action of the yellow fever poison on the blood and textures. The yellow fever poison excites a train of chemical changes, the final result of which is fatty degeneration. Thus in the case of the muscular fibres of the heart, there is fatty degeneration, although from the structure and action of this organ, there could be no such passive congestions as we have in the liver and kidneys. It is probable that the fatty degeneration extends to all the unstriped muscular fibres, and may even disable the muscles of locomotion and animal life. The granules of the cells of the epithelium of the uriniferous tubes set free by the disintegration of the protoplasm, oil globules, detached cells, and albuminous matters and mucus, form opaque granular masses which block up the tubuli uriniferi.

We have in these structural alterations of the kidney, which vary in kind and degree according to the stage of the disease, an explanation of the frequent occurrence of albumen casts, detached cells of the epithelium of the uriniferous tubes, and oil globules and granular matter in the urine of yellow fever.

MALARIAL FEVER.

medicines, and such small assistance as lay in my power. On the thirty-first of October, I was called to see the man, at the house of one who had allowed him shelter in a room over the stable. I found the patient jaundiced, surface of a deep golden color; incessant vomiting; urine resembled blood in color and odor: Pulse rapid; patient very restless.

On my recommendation the patient was sent to one of my wards in the Charity Hospital. The patient entered the Charity Hospital, Ward 13, November 1, 11 a. m. 1877.

The patient stated that he had enjoyed good health, until he moved to Claiborne parish, Louisiana, in January 1876; and about a week after he was attacked with chills and fever. He remained in Northern Louisiana, where he continued to have chills and fever, at intervals of two or three weeks, when he arrived in New Orleans. After remaining a few days in the city, he went to work on a rice plantation, about seven miles below the city; after remaining on the plantation a short time, he became sick and was sent to the Charity Hospital, where he staid but one day. Continued to have chills and fever about once every two or three weeks. The present attack commenced with a chill on the night of the twenty-seventh of October, 1877, had another chill on the night of the twenty-eighth; October 29, no chill. Had a chill on the night of the thirtieth, and in the morning observed blood on his clothing, and observed that his skin was of a yellow color. Vomited gray-green colored mattesr, and passed bloody urine during the thirty-first. I saw the patient at 8 o'clock p. m., directed his removal to the Charity Hospital.

November 1st, 11 a. m. The patient has just entered the Charity Hospital, suffering with head ache, intense thirst, nausea, and vomiting of large quantities of grass-green liquid. Tongue swollen, coated, dry and very rough; gums pale; great pain and tenderness over the entire abdomen; respiration embarrassed, and the patient groans during respiration. Bowels moved twice this morning. Surface of a golden yellow color. Pulse weak and rapid, 102 per minute. Pulse, 102; respiration, 24; temperature of axilla, 102° F.; acid urine of a deep blood red color, with the odor of blood.

Amount of urine excreted during twelve hours, October 31st, six, p. m., and November 1st, six, a. m.: 500 cc.; reaction strongly, acid, sp. gr. 1020; deep blood red color, upon standing, urine let fall heavy brownish red deposit. Under the microscope the deposit consisted of colored blood corpuscles, variously altered in shape, yellow granular matter, and casts of the tubuli uriniferi, some of which were of a deep

YELLOW FEVER.

MALARIAL FEVER.

orange color, others of a deep red blood color, and contained colored blood corpuscles. The deposits resembled closely those illustrated by figures 53 and 54, Plate 13. Sp. gr. of the urine after the removal of the albumen and blood by filtration, 1016.

500 cc. of urine, passed during twelve hours, contained: urea grains, 205.6; chloride of sodium, 38 5; albumen and constituents of the blood coagulated by heat and mineral acids, 119.75.

November 1st, six o'clock, p. m.: Pulse, 102; respiration, 24; temperature of axilla, 102.4° F.: continues to vomit green matter; urine, bloody.

November 2d, eight o'clock, a. m.: Pulse, 98; respiration, 20; temperature of axilla, 99° F.; vomited eight times during the night and morning; urine of a deep blood color. Whilst the bed clothes were being changed, the patient was seated upon a stool, he had a convulsion.

Examination of Blood. Coagulum, small, but very firm; serum, golden colored, and contained coloring matter and acids of bile, urea and extractive matters in greatly increased amounts. Under the microscope (420 diameters) some of the colored blood corpuscles presented a swollen and crenated appearance; the majority, however, presented a normal appearance. A few pigment particles were observed in the blood, and some of the colorless corpuseles contained the pigment granules characteristic of malarial fever. The blood also contained numerous vibrios and vibrating filaments about one twenty-thousandth of an inch in diameter.

One thousand parts of blood contained: water, 844.29; dried blood corpuscles, 47.55. (moist blood corpuscles, 190.2); fibrin, 14.51; albumen, 57.27; extractive matters, salts, urea, coloring matters of bile, biliary acids and soluble salts, 23.80; fixed saline constituents, 12.85. One thousand parts of the blood after complete coagulation contained: clot, 348.19; serum, 651.83. We observe great diminution of the colored blood corpuscles; great increase of water; marked increase of the fibrin. The fibrin has actually risen to the high figure which we regard as characteristic of the phlegmasiæ, and especially of acute pneumonitis and pleuritis. Notwithstanding the increase of the fibrin, the body of the patient was covered during the past two days with small petechiæ of a deep purple and red color. We also observe marked increase in the extractive and saline matters of the blood.

Examination of Urine. Amount of urine excreted during twenty-four hours. November 1st, 11 o'clock, a. m., to November 2d, 11 o'clock, a. m. 880 cc.; reaction strongly acid; sp. gr. 1016; color deep blood red, odor like that of blood. The

YELLOW FEVER. MALARIAL FEVER.

microscope revealed the presence of casts of the tubuli uriniferi, some of which were composed of coagulated blood, and others of orange-yellow granular matter. Vibrios were observed in this urine. Upon standing a heavy crop of deep red lozenge-shaped crystals of uric acid were precipitated.

880 cc. of urine passed during twenty-four hours, November 1st, 11 a. m., to November 2d, 11 a. m., contained urea, grains, 271.04; chloride of sodium, grains, 13.55; albumen and matters coagulated by heat, grains, 142.24.

November 2d, 6 o'clock, p. m.: vomiting continued; urine greatly diminished; passed urine only once during the night, and then in small quantity, and apparently unconsciously, in bed; about three fluid ounces. Pulse, 112; respiration, 15; temperature of axilla, 98.8. Patient lies quiet in a stupor, and cannot be aroused.

November 3d, a. m.: passed a quiet night; no vomiting; bowels not moved; suppresion of urine; died unconscious during the morning; at five o'clock, a. m., had a slight convulsion, gasped three or four times, with an interval of a minute between each gasp, and then ceased to breathe.

Autopsy. Four and one-half hours after death.

Surface of a greenish-yellow color. When the skull-cap was removed, the dura mater, arachnoid, pia mater, and surface of the brain presented no marks of inflammation or structural alteration. No unusual amount of cerebro-spinal fluid was observed. When careful sections of the brain were made, so as to expose the ventricles, no unusual amount of fluid was found in their cavities, and the gray and white textures of the brain, as well as its membranes, presented a pale, anæmic and firm appearance. The medulla oblongata and spinal cord, presented a pale, anæmic appearance. Chemical analysis showed the presence of urea in the cerebral structures in considerable amount.

Thorax: lungs, normal in structure and appearance, but pale and anæmic. Heart; pale, and of a more decided yellow color than usual in malarial fever; it was also softer than usual in this disease, and resembled in its yellow color and soft textures more nearly the heart of yellow fever. Right side of heart distended with a fibrinous clot, attached to the carneæ colamnæ, chordæ tendineæ, and edges of the tricuspid valve. Branches of the clot also extended into the pulmonary artery. Under the microscope, the muscular textures of the heart, presented a larger number of oil globules, and more granular matter than is usual in the natural heart, or in that of malarial fever, uncomplicated by lesion of the kidneys, urinary suppression and jaundice.

That there was an actual increase of oil

YELLOW FEVER. MALARIAL FEVER.

in the heart, is shown by the following results of chemical analysis: Weight of heart, 9½ troy ounces; oil or fat in heart, 216.60, troy grains; oil or fat in 1000 parts of muscular tissue of heart, 47.5. The textures of the heart yielded urea in comparative abundance. Stomach pale and anæmic; mucus membranes stained of a deep green; stomach contained eight fluid ounces of dark green fluid, sp. gr., 1012; 1000 parts contained, water, 952.0; solid residue, 48.0. Chemical analysis showed the presence of bile, acids and coloring matters and of urea, and the absence of albumen and all constituents of the blood. The microscope failed to reveal the presence of colored blood corpuscles. Liver enlarged; color lighter than in malarial fever, and of a deep Spanish brown. Under the microscope the liver cells contained more oil globules than usual in malarial fever, but less than in yellow fever. Oil in 1000 parts of liver, 40.1: gall bladder distended with 1600 grains dark green bile, sp. gr. 1038; 1000 parts contained, water, 868.88; solid residuum, 131.12; fixed saline constituents, 17.35. Intestinal canal empty, and contracted. Spleen enlarged; under microscope numerous pigment particles.

Kidneys. Capsule adherent; external surface of a deep purplish-red congested appearance. Weight of kidneys, nine ounces, and one drachm. When sections were made of the kidneys, the cortical and medullary portions presented a deep purplish-red and bloody appearance. The color was deeper in some portions than in others, resembling circumscribed effusions of dark blood. All portions of the kidneys, however, were altered in appearance, and the tubuli uriniferi, especially at the termination of the pyramids, could be seen like dark red lines of coagulated blood. The appearance of the section of the kidneys is represented in Plate 13, figure 55.

Microscopical examination revealed the fact that many of the tubuli uriniferi throughout their entire extent, were filled with coagulated blood. The hæmorrhage appears to have taken place through the Malpighian corpuscles chiefly, as little or no blood was effused around the tubuli uriniferi.

It would appear from this observation that during the prolonged cold stage the kidneys become congested in a manner similar to what occurs in the spleen. During this congestion, rupture of the blood vessels and of the capsular membrane of the Malpighian corpuscles occurred, such rupture being mainly due to their anatomical structure and the greater tension of the blood. When from any cause the blood coagulates in the tubuli uriferi, their function, as excretory tubes, is destroyed, the extent of the impairment of the excreto-

YELLOW FEVER.

RINARY BLADDER.—As a general rule
bladder contains little or no urine in
ow fever. The urine is of a light yellow
r, without any crystalline bodies, and
ed with albumen, granular fibroid
ter, urate of ammonia, casts of the tu-
uriniferi, and excretory cells of the
ey. In many cases the urine is entirely
ressed for as long a period as forty-eight
s before death. So long as the kidneys
orm their functions freely and regularly
patient may recover even though black
it may have appeared, but if the action
he kidneys has been arrested by struc-
l changes, death is inevitable. Mucous
brane of bladder often congested and
me cases ecchymosed.

MALARIAL FEVER.

function of the kidneys being dependent upon the number of excretory tubes blocked up by coagulated blood.

The appearance presented by the tubuli uriniferi, as seen under low powers in sections of the kidneys, is seen in Figure 56, Plate 13.

In this figure a view is given of the termination of one of the pyramids of the kidneys.

We observe in these structural alterations of the kidneys the grand cause of the dangerous and often fatal character of malarial hæmaturia.

URINARY BLADDER.—Often distended, with high-colored urine, free from albumen and casts. In malarial hæmaturia the urine contains casts and blood corpuscles, and desquamated cells of the tubuli uriniferi. Casts high colored, and often contain colored corpuscles. In some cases of bilious remittent fever, and also in some cases of chronic malarial poisoning, the urine contains albumen.

CONSTITUTION OF THE ATMOSPHERE IN YELLOW FEVER.

We have already alluded to this subject, but in order that the nature of the exper ments may be more fully comprehended, we will enter more fully into detail.

Seizing upon the fact that cold arrests yellow fever, I sought to condense and rend palpable to the eye and touch the poison, by passing large volumes of the yellow feve atmosphere through ice and ice-cold water by means of carefully constructed bellows.

In this manner I threw from 100,000 to 600,000 cubic centimetres of air through i and ice-cold water. The products of the condensation thus obtained were examine both chemically and microscopically. In this manner I have subjected the air of local ties and rooms which appeared to be infected with the yellow fever poison, to microscop cal and chemical examination, and I have discerned numbers of minute living organ particles, which might properly be termed sporules, having a diameter ranging fro one-ten thousandth to one-thirtieth thousandth of an inch; and also numerous livin animalculæ, together with minute particles of fatty bodies, scales from the human bod and fibres from the bedding and clothing. The sporules resembled most nearly the m crococci and cryptococci of Hallier. I have observed similar particles in the blood yellow fever patients, and have observed bacteria in the air and in the blood.

Results of the examination of the air of the rooms in which yellow fever patients were confine in the first group of cases in the brick house No. 363 *Magazine street, corner of Thal August*, 1878:

No local cause of disease could be discovered in the brick building, nor in the pav streets immediately surrounding it. The premises were clean, and had been frequent cleansed and disinfected.

Of five cases treated in this house from the 29th of July to the 21st of August, 1878, fo terminated fatally. During the entire period of the continuance of these cases, the te perature, both within and without the house, was high, varying from 84° to 94°.

The total mortality in New Orleans from the first to the twenty-fifth of August wa yellow fever, 616; all causes, 1190.

Impartial judges will admit that this was a suitable location, in the heart of t infected district, and a suitable season, to condense and examine microscopically a chemically the yellow fever atmosphere. The air of the rooms occupied respectively Mr. H. as a sleeping apartment, and in which no case of fever or other illness l occurred, and by Miss R., Mr. D. and Mr. O., was passed through ice and cold water the 13th, 14th and 15th of August. About 600,000 cubic centimetres were passed throu the ice and cold water in each room. It is worthy of note that two deaths had occur in the room occupied by Miss R. The air was subjected to this treatment both at nig and during the day.

A marked difference was observed between the water of the melted ice from the la front room of Mr. H.'s house and the three small side rooms of the wing of the br house facing Thalia street. The water from the front room was perfectly transpare whilst that from the yellow fever rooms presented a turbid, milky appearance, and fall a considerable deposit.

When the water from the yellow fever rooms was subjected to microscopical exami tion, the following extraneous matters were observed:

1. Numerous minute particles, many of which had a vibratory motion. Under a n nifying power of 420 diameters, with Beck's best 1-5th of a inch (a superior glass of cellent defining power) these appeared as minute oval specks. Under 1-18th of an i (1050 diameters) these particles were resolved into distinct oval cells with a cen nucleus, resembling in all respects the spores of delicate fungi.

2. Bacteria and delicate thread-like filaments, similar to those observed in the u and in the blood of yellow fever.

3. Revolving minute animalculæ and spores, with active rotatory movements.

4. Minute particles which could not be resolved into distinct structures by the hig powers. When magnified 1050 diameters, these resembled mere specks of matter, m of which have an active vibratory motion.

5. Epithelial cells,

6. Particles of dust evidently inorganic in their nature.

7. Oil globules. As the patients were well rubbed with olive oil, the oil globules have in part been derived from this source; but as oil increases in the blood an certain organs, as the liver, heart and kidneys, during the progress of yellow fever, I disposed to refer a portion of the oil globules to the diseased bodies. It is possible oil might be exhaled from the pulmonary surface in small quantities during the prog of the disease.

8. Hairs and particles of cotton and sheep wool from the clothing and bedding of patients with numerous adherent spores.

When the liquid from the yellow fever rooms was evaporated, a distinct deposit was left in the watch glasses and upon glass slides, which, in addition to the various organic substances specified, contained numerous stellate and acicular and prysmatic crystals and granular particles. The crystals appear to be those of the chloride and cerbonate of ammonia. Reaction of water slightly alkaline.

The presence of organic matter was still further shown by the usual chemical tests, as charring by heat, blackening by sulphuric acid, and decoloration of the solution of the per-manganate of potassa.

When glass slides were moistened with ice cold water and held so as to receive the breath of yellow fever patients in respiration, the microscopical examination yielded results similar to those recorded above.

After the most minute examination of the individual specimens from the different rooms in Mr. Harrison's house, not only immediately after the experiments, but also during various periods, embracing nearly six months, I discovered no forms which could be referred to such microscopical plants as the Chlorococcum vulgare, Protococcus viridis, Palmella cruenta, Coccochloris brebinonii, and other confervoideæ, or unicellular algæ capable of producing chlorophyl. Certain granular cells observed in malarial fever (in the blood), resemble most nearly the resting spore of Bulbochæte intermedia, and the granular cells of Palmella cruenta; but no such cells were observed in the yellow fever atmosphere in the brick house 363 Magazine street. In fact it would be difficult to conceive how the algæ of any description could thrive and multiply in this well paved and dry situation. The forms were referable to those most nearly connected with putrefaction and fermentation, as the Bacteria and Torulæ, Penicillius and Micrococci and Cryptococceæ. Kutzing includes his genera Cryptococcus, Ulvina and Sphærotilus, amongst the families of algæ, but they appear to be the conidia (reproduction cells, stylospores and spermatia) of the mycelia of mildew fungi. The absence of any of the known forms of the algæ in the air of yellow fever collected in this locality, which is as free from any source of swamp malaria as the best drained and paved portions of the city of New Orleans, is important in that this class of plants is thus excluded from the consideration of the questions relating to the origin and causation of yellow fever.

Experiments upon living animals with the water through which the yellow fever atmosphere had been passed, in the brick residence, 363 Magazine Street.

The liquid obtained by passing the air of the rooms in which the yellow fever patients lay through ice and ice-cold water, was conveyed immediately to my laboratory, and injected subcutaneously into eleven rabbits and two pigeons. In several of the rabbits the water was injected directly into the blood, through the large vessels of the ears. In the pigeons, the liquid was injected into the pectoral muscle. No rabbit was destroyed by these procedures, although abscesses formed in several places in different animals, in the neighborhood of the points of injection, and in such instances the animals manifested febrile phenomena. A pregnant female rabbit gave birth to four living rabbits several days after the experiment.

The mother appeared to have no milk, and although we attempted to rear the young rabbits by artificial means, they perished; the mother, however, survived and is still living, and has since given birth to thirteen rabbits, seven at one time and six at another.

One of the pigeons was killed by a cock in my yard, about ten days after the injection of the "*yellow fever water*" into the left pectoral muscle. Upon dissection, I found the left side to be atrophied and in a state of acute fatty degeneration. Upon microscopical examination, I found that some of the fibres of the blanket covering the yellow fever patient had been ejected along with the water into the pectoral muscle.

Two views may be taken as to the effects produced upon this bird.

1st. The fibres of the blanket acted as a local irritant, and induced fatty degeneration and atrophy of the muscular tissue.

2d. The granular matter and spores of the yellow fever atmosphere induced chemical changes in the muscular structures, which were converted into oil.

The latter supposition is at least worthy of consideration, as the yellow fever poison produces rapid fatty degeneration of the heart, liver and kidneys. It is also worthy of note, in this connection, that the granular matter possessing active motion, as well as the sporules, of the yellow fever atmosphere, are found in greatest abundance adhering to the fibres of cotton and wool condensed in the water.

The other pigeon was killed at the end of two weeks, and found to be healthy.

Second Group of Cases, 46 *South Villeré street,* 44 *South Villeré street and* 47 *Robinson street.*

Low situation—mud streets, withfoul, ill drained gutters, reeking with filth, foul matter running through yard.

Nine cases of yellow fever occurred in these three houses, between July 31st., and August 15th, of which number two died.

The air of the rooms in which the patients suffered with yellow fever, also that obtained from the neighborhood of a foul stinking gutter in the yard of 46 S. Villeré street, which also acted as a surface drain to the surrounding houses, was subjected to the same treatment as in the residence 363 Magazine street, 400,000 cubic centimetres of air, in each of these sick rooms, containing four cases, were passed through crushed ice and ice-cold water, during the day and also at midnight; 600,000 cubic centimetres of air were at midnight treated in the same manner, the bellows being held over the foul drain in the yard. Total amount of air thus examined at the locality, 1,800,000 cubic centimetres.

The air from the sick room presented the same elements as were observed in the preceding experiments on Magazine street, with the addition of several hundred cells which evidently belonged to the plants, resembling the chlorococcum vulgare, protococcus viridis and palmella cruenta. The true characters of these elements were fully shown by examinations of the water, at various periods extending over five months, during which time the cells increased considerably in size. The most numerous elements were as in the case of the water obtained from the sick rooms at 363 Magazine street, minute spores, minute thread-like bodies, bacteria, and minute granules which could not be resolved by the highest powers into any distinct animal or vegetable structure, epithelial cells, oil globules, several parasites from the skin, and fibres of wool and cotton, and particles of dust were also observed under the microscope. The crystalline bodies also appeared when the liquid was slowly evaporated.

The water through which the air over the foul gutter was passed contained chiefly cells of the plants resembling the algæ, as the resting spores of Bulbochæte intermedia chlorococcum vulgare protoccus viridis, and palmella cruenta. Bacteria and minute spores and minute particles were also abundant.

When the waters obtained in the manner stated from this locality were injected subcutaneously into living animals, the results were similar to those previously detailed.

Third Series of Cases: Examination of Air of Residence 495 *St. Charles Street, corner St. Andrew, Surrounded by Low, Ill-drained Dirt Streets and Foul, Stinking Gutters—Malarial Fever not Infrequent in this Locality—New Orleans*, 1878.

Eight cases of yellow fever occurred in the house 495 St. Charles street, at which the author and his family resided during the yellow fever epidemic of 1878; of this number no one died, all recovered.

Four cases recovered from September 16th to October 4th, and five cases subsequently.

The experiments upon the atmosphere of this house were made before the occurrence of the first case attacked September 16th, and during the progress of the first four cases of yellow fever. About 1,900,000 cubic centimetres of air of the lower rooms (only occupied during the day) and of the sleeping apartments, both before and after the prevalence of the fever were subjected to the influence of artificial cold. As in all the preceding and subsequent experiments, the purest ice was employed. Upon careful examination and chemical analysis of the two varieties of ice used in New Orleans, the Boston ice and the Louisiana ice, the latter being manufactured by artificial cold in the city from distilled water, I found them to be free from organic impurities; and whilst the artificially preparedice was entirely free from all saline matters, the Northern or Boston ice contained only traces of the chlorides and sulphates.

The experiments conducted at 495 St. Charles street yielded results essentially similar to those obtained at 363 Magazine and 46 South Villeré streets. Thus the water, after the passage of the air of the lower rooms, which were used only as sitting and reading apartments, presented a clear and transparent and colorless appearance, with only a few sporules; that obtained from the rooms during the prevalence of the fever presented a milky and turbid appearance, and contained numerous spores of various sizes, the most minute requiring the highest powers for their detection; also minute particles of vibrating matter, which could not be resolved into specific shapes under the highest powers. As in the previous examinations, the particles of cotton wool and of wool originally floating in the air and condensed in the cold water, contained vast numbers of these spores and minute particles, adhering to the fibres and entangled in the meshes. It is but just to conceive that the clothing and bedding of the patient become more or less permeated by these minute particles and spores. We have thus a practical demonstration of the possibility of the contamination of the clothing of patients by matter in a minute state of subdivision, a portion of which, as the sporules, are capable of reproduction.

After standing some time, I observed a few cells, chlorococcum, protococcus, and the resting-spores of several of the unicellular algæ. This locality, as that at 46 South Villeré, may be regarded as favorable to the development of the algæ, as the gutters are wide, deep and simply excavated in the earth at the sides of the street. Both St. Charles and St. Andrew streets are in this locality unpaved, and during periods of continuous rains, the streets become almost a quagmire of tenacious mud.

In these deep "*mud gutters*" numerous algæ flourish, and also numerous insects are developed, and the congo-snake (amphiuma means) find a congenial home and attains a large size.

I will state that in the present examination, as well as in the preceding experiments at 363 Magazine street and 46 South Villeré street, and in the subsequent observations at the corner of Carondelet and Milan streets, drawings of the microscopical objects were executed and preserved for comparison. The microscopical objects themselves have also been carefully viewed in my laboratory by three members of the Board of Health of the State of Louisiana, and by my friend and colleague, Professor Elliott, and by Professor R. S. McCulloch, of Baton Rouge. No difference of opinion existed as to the nature of the objects obtained from the yellow fever atmosphere.

It is to be hoped that in the future similar observations will be made, at various times and in various portions of our country; not merely during yellow fever epidemics, but also during periods of health and of epidemic visitation by divers diseases.

V. Group of Cases in the house at the corner of Milan and Carondelet streets; malarious locality; exposed to the direct winds of the low grounds and swamps.

Seven cases of yellow fever occurred in this house, between September 22 and October , of which one case terminated fatally.

The house in which this family dwelt was the only one on the entire square, and in act there were no houses between it and the swamps towards the lake. The location was low and subject to overflow in high water. The rooms were small and ill ventilated. caused the disposal of the patients through the various rooms. The family consisted f six: father, mother and four children, all of whom were attacked, the cases dating as ollows: September 20th, September 22d, September 26th, September 29th, October 4th, October 5th. One death occurred in the six cases.

The air of the various rooms in which the sick lay was subjected to examination in the manner previously described, 1,100,000 cubic centimetres being thus operated on. Upon microscopical examination, in addition to the minute particles of matter possessing ibratory motions, and minute sporules, bacteria and animalculæ, the water contained umerous larger vegetable cells with nucleus and nucleolus, about the size of the colorless corpuscles of the blood, and of a distinct green color. These cells resembled most early those of the *chlorococcum vulgare* and of the *protococcus viridis* and of the coccochloris rebinonii and resting spore of Bulbochæte intermedia. We also observed colored granules and colored granular cells of a dark brown and reddish brown color, similar in all respects to the dark granular bodies and dark granular cells observed in the blood of malarial fever. These were probably a species of palmellæ resembling the cells of *Palmella cruenta.*

Iodine imparted a distinct blue color to many of these cells. Upon evaporation, prismatic crystals formed, which were rendered deep blue by a solution of the sulphate of copper.

The water thus obtained from this sick room of the small house (corner of Milan and Carondelet streets) was injected into 5 (five) rabbits, subcutaneously. In some instances produced local irritation and abscesses attended with febrile symptoms; but no rabbit as destroyed by the liquid.

The results were similar to those obtained by the injection of the water obtained in the sidence 363 Magazine street; although the liquid obtained at the former locality contained organized elements, and more especially the algæ, which were not present in the tter.

The most marked change observed in the liquid obtained in the dwelling at the corner Milan and Carondelet streets, by the lapse of some three and a half months, was the owth of the unicellular algæ and the formation of fillaments by the fungi.

Origin of Hospital Gangrene, Erysipelas and Puerperal Fever.

We alluded to the conditions which appeared to be essential to the origin d spread of yellow fever, and cited the instance of the *production* of moist or spital gangrene, *de novo* amongst the Confederate troops during the American Civil ar. The origin of hospital gangrene as well as of erysipelas can be traced to the foul r of ill-kept hospitals, in which wounds, whether accidental or made by operative rgery, undergo certain characteristic marked changes, in which specific poisons or contagions are developed. Traumatic erysipelas as well as hospital gangrene furnishes a ecific-contagion from the affected materials of the body, and may be regarded as a motic disease. Numerous facts establish that a physician going from a case of erysipes to a puerperal woman, may convey the specific contagion to the uterine surface, and ay occasion death by that form of puerperal fever, which has justly been regarded by thologists as *intra abdominal erysipelas,*

Mr. John Simon,* has well observed, that to say that erysipelas is contagious, is not to say that no case of it can arise without contagion from a previous case. In this respect hospital gangrene, pyæmia and erysipelas appear to hold a peculiar place among the zymotic diseases; and it is probable that full and careful research may show that this peculiarity is equally shared by yellow fever. Probably of the specific contagia, those of erysipelas and hospital gangrene, stand in nearest affinity to the ferments of common cadaveric decomposition, and are therefore *most* apt to arise *de novo*, whenever certain animal textures and juices fall into common putridity. Dr. Semelweiss believed that the immense mortality from puerperal fever in the division of the Vienna lying in hospital, varying from about a fourth to about a ninth part of all the deliveries which took place there, to depend on an infection *the real source which was to be forced in the hands of the medical men in attendance, contaminated with cadaveric poison.* The other division of the hospital (reserved for the practical instruction of midwives, whose training does not require them to be brought into contact with dead bodies) suffered only about the tenth part as much as the first; and this was the more noticeable as the second division was inferior to the first in the size and airiness of the wards. Dr. Semelweiss, acting upon his supposition as to the cause of the disease, required that the male attendants of the first division should, as much as possible, avoid contact with cadaveric matter; that after such contact they should never make a vaginal examination till the following day; and that, besides very thoroughly cleaning their hands, they should systematically *disinfect them with a solution of chlorine.* The latter precaution was not introduced till some months after the more general precautions had been adopted. The result of these measures was that the mortality of the first division at once fell to the usual average of the second division. In 1846 the death rate per cent had been 13⅞; in 1847 it was 5 1-5, and in 1848 it was 1¼.

This well known and often quoted instance clearly established the possibility of the *spontaneous generation of the erysipelas contagium*, from unhealthy and gangrenous wounds, exposed surfaces of decaying animal matter undergoing similar putrefactive changes to those of the cadaver in the dissecting room: wherefore, if cadaveric decomposition can furnish the contagium of erysipelas and puerperal fever, it is evident that every surgical ward, in virtue of the natural processes of disease going on in it, *may be the birth-place of that contagium.* The influence of the contagium thus engendered, from a wound of such severity as to involve local mortification and its influence on the surrounding atmosphere would be determined by circumstances; if the ward be well ventilated, dilution and oxydation may render it inert in a short period, and before it had traveled far from its source; on the other hand, in an ill-ventilated ward crowded with ill-conditioned surgical cases, the unclean atmosphere abounds with material which the contagium probably converts into its own likness, and thus all the wounded might be brought under its influence, and a so-called *epidemic* of erysipelas established. In addition to the danger that the contagium might thus, by commingling of atmosphere, spread from one patient to another, there is also the danger that the attendants in the successive operations and wound dressings which they perform, may carry the specific poison from the part of a ward to another, and even to remote wards.

If the preceding familiar illustration, drawn from surgical pathology, be applied to the elucidation of the origin of yellow fever, no substantial or rational objection can be urged that this disease, in like manner with hospital gangrene, erysipelas and puerperal fever, may arise under certain circumstances *de novo*, when the human constitution in a peculiar state, is subjected to the conjoint operation of heat, moisture and the agents and products of the fermentation and putrefaction of animal and vegetable substances. The conditions of heat, moisture and crowding, together with the products of putrefaction of animal and vegetable filth, appear to be the most important factors in the *spontaneous origin of the disease.* When once the specific cause, the contagium of the disease is thus developed, as in the case of the spread of puerperal fever, erysipelas and gangrene, the spread of yellow fever will depend upon several causes, as continuous heat of a certain degree, a certain amount of moisture in the atmosphere, and the relative purity or impurity of the air of the ship or city in which the disease originates, and to which its victims and their effects are transported. The demonstration by the microscope of numerous living organisms (spores of plants, bacteria and animalculæ), and of minute animal and vegetable particles in the yellow fever atmosphere, and the fact, also, that these minute bodies are found in greatest abundance, in the meshes of the particles of wool and cotton floating in the sick room, is important, as it illustrates the mode in which the contagium of the disease may be propagated and wafted from house to house, and across considerable spaces. In this view it is not necessary to regard the micrococci and criptococci, bacteria and spores, and minute particles, as the *essential causes* of this *disease*, although in the countries and under the circumstances in which yellow fever prevails, they are *necessary companions of the yellow fever contagion, and may take part in its elaboration*, during *certain putrefactive* changes, and may be the vehicles of its propagation through the atmosphere, and of its preservation and concentration in spongy fabrics, as cotton and woolen clothing.

* Sixth Annual Report of the Local Government Board, 1876, 1877, London 1878, p. 41.

AGENCY OF THE ORGANISMS OBSERVED IN THE ATMOSPHERE OF YELLOW FEVER AND IN THE BLOOD AND BLACK VOMIT.

The following hypothesis may be framed as to the nature of yellow fever and the agency of these organisms in the spread of this disease:

1. Yellow fever may be regarded as a disease depending solely upon changes of heat, moisture and other climatic conditions, acting upon the human constitution in a certain state, or the absence of ozone or electricity from the atmosphere. But if this supposition was true the disease would appear in all quarters of the city simultaneously, and not ramify from a focus and along lines of travel.

2. Heat and moisture and other climatic conditions, affecting the human constitution when in a certain state, cause the development of a certain poison in the system thus acted upon, and in this pecular state become capable of propagation; or, in plain language, the poison thus developed possesses contagious properties.

3. Yellow fever may be propagated by the direct emission or some poison from the person infected, either from the breath or the secretions. In this way the poison would be propagatered by contact, and would have no power of independent growth or self multiplication outside of the infected person.

4. The poison of yellow fever may be conveyed by minute forms of plant or animal life, the plant or animal finding a *nidus* for its growth in secretions, as black vomit and the dejecta from the bladder and intestines.

The minute forms of plant and animal life thus rendered poisonous in virtue of their development and multiplication in black vomit and the secretion and excretions and corpses of yellow fever patients, are capable of conveying the poison by attaching themselves to clothing, bedding, the sides of houses and ships, and to articles of merchandise or by being wafted about by currents of air.

5. Yellow fever may be due to special germs, indigenous to a limited portion of the world. It may be supposed that this germ exists independent of the human organism, and may be transported in ships, clothing and articles of merchandise; that it thrives in its native locality, and whilst it propagates outside of that locality, it will not exist for any great length of time, frost killing it.

With this hypothesis may be coupled the supposition that these germs have potency only when in contact with disease matters.

PRACTICAL APPLICATION OF THE RESULTS OBTAINED FROM THE EXPERIMENTS ILLUSTRATING THE NATURE OF THE AIR IN YELLOW FEVER AND THE POISONOUS PROPERTIES OF BLACK VOMIT AND PUTRID BLOOD.

1. The fact that putrid blood or black vomit of yellow fever develope immense numbers of bacteria and micrococci, and the still more important fact that the black vomit and blood of yellow fever destroy life when injected even in moderate quantities (sub-cutaneously) explains why so many deaths have been traced to the exposure of putrid corpses

2. Even if the rapid putrefaction of the yellow fever corpses and secretions and excretions be due to the agency of low organisms which are not in themselves noxious, nevertheless they become poisonous in virtue of the nidus in which they are developed.

3. Yellow fever is to be combatted in the first cases by isolation, by disinfection, fumigation, cleansing, and by the destruction of all infected articles.

4. Intermural burials are, under all circumstances, dangerous, and should be discarded. The method of burial in structures above ground, practiced in New Orleans, is especially dangerous.

5. Cremation properly conducted furnishes the best and safest mode of disposing of the dead in all cases, but more especially in yellow fever, small-pox and asiatic cholera.

QUARANTINE AND THE SANITATION OF SHIPS.

If yellow fever never originates in New Orleans, then the grand means for its exclusion rests in a rigid and efficient quarantine.

By quarantine, we do not mean simply a definite period of detention, however essential this may be in semi-tropical climates; but we include under this head all those hygienic and sanitary measures of cleanliness, ventilation, purification, fumigation and disinfection which tend to preserve ships' crews and passengers from infection, and which tend to destroy the contagium of yellow fever after its development.

The sanitation of ships, including under this head the thorough fumigation and cleansing of ships, and the proper attention to the physical, mental and moral welfare of seamen, is of the highest importance to the welfare and advancement, and uninterrupted intercourse and health of the great nations who control the destinies and make the history of the nineteenth century.

Upon assuming the duties of the President of the Board of Health of the State of Louisiana, in April, 1880, the necessity for collecting and publishing all the laws of Louisiana bearing on quarantine and sanitation was at once realized, as the acts of the Legislature, the ordinances of the City Council, and the rules and regulations of the Board of Health, were scattered through various official documents, or existed only in manuscript, or in the archives of the City Hall and Board of Health.

The quarantine laws of the State and the sanitary ordinances of the city and Board of Health were collected and published, and that order might flow from this confused mass, the following rules and regulations were elaborated, giving directions as to the mode of conducting quarantine, and as to the proper disinfection and cleansing of vessels.

Guided by this quarantine code, Louisiana has been protected during three and a half years up to the moment of writing this, July 4th, 1883, from the introduction of yellow fever.

RULES AND REGULATIONS OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA FOR THE GOVERNMENT OF QUARANTINE OFFICERS AND STATIONS, AND FOR THE ENFORCEMENT OF THE ACTS OF THE LEGISLATURE OF LOUISIANA, "ESTABLISHING AND REGULATING QUARANTINE FOR THE PROTECTION OF THE STATE."

At a meeting of the Board of Health of the State of Louisiana, held on May 24, 1880, in the State House, the President, Dr. Joseph Jones, submitted the following Rules and Regulations relative to Quarantine, which were unanimously adopted.

The President was authorized to cause the publication and distribution of said rules:

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, May 24, 1880.

SANITARY RULES FOR SHIPPING.

Rules and Regulations to be Observed by Vessels During their Stay in the Port of New Orleans, and in Other Ports and at the Various Quarantine Stations of Louisiana, and on their Passage To and From New Orleans.

SANITARY RULES.

1. Each ocean-going steamship or sailing vessel should be provided with a competent medical officer versed in the sanitation and hygiene of ships sailing in tropical or semi-tropical waters.

2. Physicians attached to ships, steamships or vessels of any description, should be considered as the Health Officers, and should be charged with the duty of watching their sanitary condition, and with the conduct of those operations which will promote in the highest degree the health of the officers, crew and passengers, and prevent as far as possible the introduction of contagious and infectious diseases.

3. As far as possible, the commerce of New Orleans with insular, tropical and sub-tropical America, should be conducted by *acclimated* officers and crews. By the term *acclimated*, is understood those who have suffered at some period of their lives with yellow fever.

4. The attention of the captain, master or medical officer, shall at all times and under all circumstances be directed to the personal cleanliness of the crew, and to their food and drinking water.

5. Neither the officers nor the crew should be allowed to sleep on shore at night, or on deck, unless protected by an awning.

6. When in tropical and semi-tropical ports, the officers and men should hold as little intercourse with the shore as possible.

7. Unless when engaged in the reception or discharge of cargo, vessels should lie in the harbor as far as practicable from the shore.

8. Earth, sand or soft porous rock should not be used as ballast. As far as practicable, the ballast should consist of hard rock, iron and other metals.

9. All vessels loading or unloading should pump out the bilge water and wash out with fresh water until the bilge water shall be odorless. Then a solution of one part of carbolic acid (Calvert's No. V), to fifty parts of water, or the following compound should be introduced and allowed to remain:

Sulphate of iron (Copperas).....*fifty pounds.*
Carbolic Acid (Calvert's No. V).....*two gallons.*
Water.....*fifty gallons.*

Every five days on the passage undiluted carbolic acid should be poured down the pump or sounding tube, and the entire hold and between decks sprinkled with one part carbolic acid (Calvert's No. V), to fifty parts of water.

When practicable, it is especially recommended that the hold should be fumigated with sulphurous acid gas, or chlorine gas.

As far as practicable the hatches should be kept open, both while in port or at sea, and the largest possible amount of fresh air be introduced between and below decks, by the use of wind sails and ventilators. White-washing of the unpainted wood-work below between decks is recommended.

10. At the close of each day, while in tropical and sub-tropical ports, all the crew should wash their entire persons, leaving off all the clothing worn that day (for washing) and dress in clean flannels and clothing throughout.

As soon as the weather will permit after leaving port, all mattresses, bedding and similar material should be got up on deck, and sunned and aired for several hours, this to be repeated every two or five days during the passage, if the weather permits.

11. All baggage and clothing of passengers should be exposed to the air, and disinfected or fumigated as soon as possible after coming on board, and again before arriving at Quarantine Station and the harbor of New Orleans.

12. Baggage-rooms, water-closets, dirty linen, lockers, cabins and berths, should be kept thoroughly clean and disinfected.

13. The quarters of the crew should be kept clean and disinfected.

The Captain and Medical Officer should direct their especial attention to the general hygiene of the crew and passengers.

ISITATION AND INSPECTION OF VESSELS BY QUARANTINE PHYSICIANS.

Sec. 4. Vessels arriving at the Quarantine Station, shall immediately proceed to the Boarding Station, and shall be visited by the Quarantine Physician, between sun-rise and sun-set, as soon as possible after such arrival. The Quarantine officer shall inspect the ship, and require of the captain or master answers in duplicate to the following questions:

QUESTIONS

To be propounded by the President, Quarantine Officers and Deputy Inspectors of the Board of Health of the State of Louisiana, to the Masters, Captains and Medical Officers of Vessels at the Port of New Orleans and Quarantine Stations of Louisiana.

Port or Station.....

Date of Inspection..... 188

1. Name of Vessel?
2. Name of Captain or Master?
3. Tonnage or Class of Vessel?
4. From whence is the Vessel you command?
5. How many days have you been on the passage?
6. At what port or ports have you touched?
7. Were any Contagious or Infectious Diseases prevailing at the port from whence your Vessel sailed?
8. If so, name the Disease?
9. Were any Contagious or infectious Diseases prevailing at the port or ports at which you touched?
10. If so, name the Disease?
11. Was any freight or passengers received at the ports at which your vessel touched?
12. If so, give particulars.
13. Have you any Bills of Health?
14. If so, produce them.
15. During the course of your Cruise or Passage, what cases of Disease have occurred on board?
16. At what dates?
17. Have any deaths taken place on your Vessel since you left the last port?
18. If so, at what dates and from what causes?
19. Are there any sick on your Vessel at this time?
20. Has Yellow Fever, Small-Pox, Cholera or Plague ever existed on this ship?
21. If so, when?
22. What is the number of Officers?
23. What is the number of the Crew?
24. What is the number of Passengers?
25. What is your cargo?
26. To whom is the cargo consigned?
27. What is the present sanitary condition of your vessel, cargo, crew and passengers?
28. Have you a Medical Officer?
29. Give the name of the Medical Officer?
30. Produce the Reports of the Medical Officer?

Signature of Master or Captain.....

Subscribed to before me,

.....

Witness:

The preceding questions and answers shall be signed in duplicate, one copy to be retained at the Quarantine Station and the other to be transmitted to the President of the Board of Health.

Disinfection, Fumigation and Purification of Vessels from Ports in which Yellow Fever Usually Prevails.

Sec. 5. All vessels from ports in which yellow fever usually prevails, or from ports where other contagious or infectious diseases are reported to exist, shall be detained at Quarantine Stations, for purpose of disinfection, fumigation and purification, and shall be disinfected, fumigated and purified.

Vessels from Infected Ports to be Detained at Quarantine Stations not less than Ten Days.

Sec. 6. All vessels from ports in which yellow fever is prevailing, or from ports where other contagious or infectious diseases are reported to exist, shall be detained at Quarantine Stations, for observation, disinfection, purification and fumigation, not less than *ten days*, or for such length of time as the Board of Health may determine.

Sec. 7. In case yellow fever, cholera, or plague, or small-pox, or typhus fever, prevails in epidemic form at the port from which the vessel sailed, or at any port at which she has touched during the voyage, or on any vessel with which she has come in contact during the voyage, the detention shall not be less than sufficient to complete the full period of ten days from the date of exposure to such infection.

Vaccination.

Sec. 14. Every officer, seaman and passenger should be vaccinated by competent physicians, with pure and fresh vaccine matter, at the port of departure, unless the subject presents satisfactory proofs of successful vaccination, or a previous attack of small-pox.

Sec. 15. The quarantine officers of Louisiana should examine the officers, seamen and passengers, with reference to his or her protection against small-pox, and in the event of failure to produce satisfactory evidence, should at once proceed to execute the necessary vaccination with pure and fresh matter.

Infected Vessels—Rules and Regulations governing infected vessels at Quarantine Stations.

Sec. 16. In case of yellow fever, cholera, small-pox, typhus fever, plague, or any other infectious or contagious disease, has attacked whilst in port, or during the voyage, or whilst lying at the Quarantine Station, one or more of the crew or passengers of the vessel, she shall be subject to the following rules and regulations:

Sec. 17. The crew and passengers shall be inspected by the Quarantine Physician, and if any are sick, they shall be removed to the proper hospital.

Sec. 18. The clothing, baggage, bedding and equipage of the crew and passengers, both sick and well, shall be exposed to the air, and shall be ventilated, purified, disinfected and fumigated.

The hatches shall be opened, and the vessel as far as possible ventilated; the hold and cabin of the vessel and all closets and clothing, linen, carpets, curtains and fabrics of every description, shall be thoroughly fumigated with sulphurous acid gas; baggage-rooms, cabins, lockers, water-closets, and all parts of the vessel to be thoroughly ventilated, fumigated, disinfected and cleansed.

The bilge-water shall be pumped out, and washed out with fresh water, until the bilge-water shall be clear and odorless. The following solution of sulphate of iron (copperas) and Calvert's Carbolic Acid No. 5, shall be introduced and allowed to remain.

Disinfectant to replace bilge-water and also for cleansing water-closets and washing decayed or foul wood ship board.

Sulphate of iron (copperas)	fifty (50) pounds;
Carbolic Acid (Calverts's No. 5)	two (2) gallons;
Water	fifty (50) gallons.

This disinfectant is readily prepared by suspending 50 pounds of copperas in a straw basket, in the upper portion of a water-tight barrel or cask, and pouring water upon the copperas, until the barrel is nearly full, and then adding two (2) gallons of carbolic acid (Calvert's No. 5). The copperas will be dissolved during the filling of the barrel. This disinfecting, deodorizing, and antiseptic fluid may be extemporaneously prepared at any time on ship board in the course of half an hour.

This solution should be used in the cleansing and purification of all unpainted wood-work, in the hold, between decks, in the forecastle, cabins, lockers and water-closets.

Coal tar constitutes an excellent paint for the interior of infected vessels, and when practicable should be applied to all unpainted wood-work, including the bottom and sides of the hold, and the upper and lower portions of the deck. A mixture of solid asphalt, carbolic acid and turpentine is a valuable paint and disinfectant.

Sec. 19. The amount of sulphur consumed during the fumigation of a vessel should be regulated by the size and capacity of the craft, nature of cargo, and general hygienic condition.

When sulphur is burned in iron pots, or pans, the fumigation should be continued until the sulphur is extinguished in the consumption of the oxygen of the air and the liberation of the sulphurous acid gas. At least two pounds of sulphur should be burned for every 1000 cubic feet of space in the vessel. The number of fumigations will in like manner depend upon the condition of the vessel, crew, passengers and cargo.

Sec. 20. If, in the judgment of the Board of Health, a vessel require it, the Quarantine Physician may order the following sanitary measures:—Baths, or other bodily care for the person; washing, or other disinfecting means for clothing; displacement of merchandise on board, or complete breaking out; subjection to high heat, incineration, or submersion at a distance below the surface of the water, for infected articles; the destruction of tainted or spoiled food, or beverages; the complete ejection of water; thorough cleansing of the hold, and the disinfection of the well. In short, the complete purification of the vessel in all her parts, by the use of steam, fumigation, force-pumps, wind-blasts, scrubbing or scraping, painting with coal tar, or mixture of carbolic acid, turpentine and asphaltum, and finally detentention at quarantine anchorages until these means are perfected.

Sec. 21. All articles which have been in contact with persons sick with contagious or infectious diseases, should be burned, or treated with a boiling hot solution of sulphate of zinc and common salt, dissolved together in water, in the proportion of four ounces of sulphate of zinc and two ounces of salt to the gallon.

Discharge of Cargo and Purification on Infected Vessels.

Sec. 22. Whenever it shall be deemed necessary by the Board of Health, the cargo of any vessel dangerously infected shall be discharged in lighters, or transferred to the ware-house especially prepared for reception.

After the discharge of cargo, the vessel shall be thoroughly cleansed, disinfected and ventilated; the hold, forecastle, or sleeping apartments of the crew, and the cabins for passengers, as well as bunks, or portberths, shall be thoroughly cleansed, disinfected and ventilated

All decaying wood shall be scraped and disinfected with strong solutions of sulphate of iron and carbolic acid. The decks and unpainted woodwork should be treated in like manner.

Until the process of discharge of cargo and purification has been completed to the satisfaction of the Quarantine Physician, there shall be no communication between the vessel and the other vessels, except by the written permit of the Quarantine Physician.

Every person who shall go on board of any vessel while performing quarantine without the permission of the Resident Physician, or his assistants, shall forfeit the sum of fifty dollars.

Rules Governing the Sick at Quarantine Stations.

Sec. 23. The sick shall be detained in hospital until recovery, and for such a time afterwards as will insure that they will not communicate or transport the cause of disease.

Passengers under observation shall be detained at least ten days from the time of the last exposure, or during the period of incubation of the disease or diseases for which the ship is detained. In case of the occurrence of other contagious or infectious diseases, they shall be detained until, in the judgment of the quarantine officer, they may be safely permitted to proceed to their destination.

In the case of small pox occurring on board a ship arriving at any port, the sick shall be sent to the hospital, and all not sick shall be immediately vaccinated, unless offering evidence of previous satisfactory vaccination, or of a previous attack of small-pox.

Sec. 24. Persons employed at Quarantine Stations, who have been brought in contact with infected vessels, shall not be permitted to leave such station until their clothing has been washed and disinfected, nor until an interval of ten days since their last exposure to infection.

When Necessary, the Public Health to be Protected by Additional Measures.

Sec. 25. It shall be the duty of the Quarantine Physician to take the responsibility of applying such additional means as may be deemed indispensable for the protection of the public health; but in all such cases the Quarantine Physician shall report immediately and fully his action to the Board of Health.

Classification of Merchandise at Quarantine Stations for Sanitary Measures.

Sec. 26. For the purpose of sanitary measures, merchandise shall be arranged in three classes:

1. Merchandise to be submitted to an obligatory quarantine, and to purification.
2. Merchandise subject to an optional quarantine; and
3. Merchandise exempt from quarantine.

The first class comprises all clothing, personal baggage and dunnage, rags, paper-rags, hides, skins, feathers, hair, and all other remains of animals, cotton, hemp, woolens and coffee in bags.

The second class comprehends sugar, silks and linen, and cattle.

The third class comprehends all merchandise not enumerated in the other two classes.

With existing quarantinable disease on board, or if there be any such disease on board within the ten days last preceding, merchandise of the first class shall be landed at the quarantine warehouse.

Merchandise of the second class may be admitted to pratique immediately, or transferred to the warehouse, according to circumstances, at the option of the quarantine officer, with due regard to the sanitary condition of the port. Merchandise of the third class shall be declared free, and admitted without unnecessary delay.

Rules Regarding Foul Vessels.

Sec. 27. If any vessel, though not having had during the voyage any case of quarantinable disease, yet be found in a condition which the Quarantine officer shall deem dangerous to the public health, the vessel and cargo shall be detained until the case shall have been considered; the decision of the quarantine officer, however, in all such cases, shall be rendered within twenty-four hours.

Vessels in an unhealthy and foul state, whether there has been sickness on board or not, shall not be allowed practique, until they shall have been duly cleansed and ventilated.

Duties and Powers of the President of the Board of Health.

Sec. 28. It shall be the duty of the President of the Board of Health to reside in New Orleans and superintend the different quarantine stations of the State, and it shall be his duty to visit them as often as the Board of Health may deem it necessary. He shall have the power to issue, during the adjournment of the Board of Health, to constables or the sheriff, all orders and warrants provided by the provisions of the "Acts of the Legislature of Louisiana, establishing and regulating Quarantine for the protection of the State," and shall report to the Attorney General all violation of the same. Whenever it shall be necessary so to do, the President of the Board of Health shall have power to issue his warrant to the Sheriff of the city or parish where any vessel may be, having violated the provisions of the "Acts establishing and regulating Quarantine for the protection of the State," commanding him to remove said vessel to the quarantine ground, and arrest the officers thereof, all which warrant shall be executed by the officer to whom the same shall be directed, who shall possess the like powers in the execution thereof, and be entitled to the same compensation as if the same had been duly issued out of any court of the State.

Legislative Acts Establishing and Defining the Powers of the Board of Health, State of Louisiana, Relative to Quarantine.

Sec. 29. The Board of Health of the State of Louisiana establishes the following rules and regulations relative to Quarantine in virtue of the powers conferred by the several Acts of the Legislature of Louisiana, "establishing and regulating Quarantine for the protection of the State," viz:

"An Act to establish Quarantine for the protection of the State," approved March 15, 1855. An Act supplementary to an Act entitled 'An Act relative to Quarantine,' approved March 18, 1858. "An Act to amend an Act entitled 'An Act to establish Quarantine for the protection of the State," approved March 16, 1870. "An Act to authorize and empower the Board of Health of the State of Louisiana to detain and disinfect, and to pass after disinfection, vessels from infected ports, at and from quarantine stations in lieu of a time of quarantine detention in certain cases, and to repeal conflicting laws," approved March 24, 1876. "An Act to reorganize and render more efficient the Board of Health of the State of Louisiana; to define its powers and prescribe its duties and those of Quarantine and other officers under its control; to provide for its expenses, and for the recording of births, deaths and marriages in the parish of Orleans; and to provide penalties for the enforcement of this Act and for violation of the same and for the ordinances and orders made in pursuance thereof," approved April 20, 1877.

Powers of Board of Health relative to Quarantine.

Sec. 30. In accordance with the said acts of the Legislature of the State of Louisiana, the Board of Health has power to fix the number of days of Quarantine for vessels liable to it; to determine how said quarantine shall be performed, and to make any and all legal regulations not contrary to said acts, necessary to carry out a proper system of quarantine and to enforce the same; to make rules and regulations for preserving good order and police within the limits of the quarantine grounds, and to impose penalties for the breach thereof; to contract for the necessary buildings at Quarantine grounds; to establish rules and regulations for the guidance of the Quarantine physicians, assistants and employees; to employ nurses and assistants to attend the sick, and such other persons as may be necessary to carry out proper quarantine regulations and to fix their compensation.

Power of Board of Health to issue Proclamation of Quarantine.

Sec. 31. In case of emergency the Board of Health shall have power to issue proclamation of quarantine without reference to the Governor, and to enact all needful regulations for the enforcement of the same.

Power of Board of Health to issue their warrant to the Sheriff of the City or Parish where any vessel may be, having violated the quarantine laws.

Sec. 32. The Board of Health shall have power to define the duties of officers employed by them, and impose additional duties to officers appointed under the Acts, entitled "An Act to establish Quarantine for the protection of the State," approved March 15th, 1855, and March 16th, 1870, to issue warrants to any constable, police officer, or sheriff, in the State; to apprehend and remove such person or persons as cannot otherwise be subjected to the provisions of this Act, or who shall violate the same; and whenever it shall be necessary so to do, to issue their warrant to the sheriff of the city or parish where any vessel may be, having violated the provisions of the "Acts establishing and regulating Quarantine for the protection of the State," commanding him to remove said vessel to the quarantine ground, and arrest the officer thereof; all of which warrant shall be executed by the officer to whom the same shall be directed, who shall possess the like power in the execution thereof, and be entitled to the same compensation as if the same had been duly issued out of any court of the State.

Duties of Resident Quarantine Physicians.

Sec. 33. It shall be the duty of the resident physicians of the quarantine stations, established by the Board of Health of the State of Louisiana, to faithfully carry out at all times and under all circumstances the provisions of the "Acts establishing and regulating Quarantine for the protection of the State," and the rules and regulations of the Board of Health, founded upon said acts.

Sec. 34. It shall be the duty of the resident physician of the Mississippi Quarantine Station, or his assistant, to visit and inspect every vessel coming from any port or entering the mouth of the Mississippi river.

He shall require the captain of every vessel thus inspected to pay the fees fixed by the acts of the Legislature: *provided*, nothing contained in this section shall apply to any vessel or craft going from New Orleans to sea and returning without having touched at any port, or at the Quarantine, tow boats excepted. Vessels free from disease, not in a foul condition and not from an infected district (which shall be decided upon by the resident physician), shall be furnished with a certificate of health, and allowed to proceed to the city. The resident physician shall require for every inspection and certificate thus furnished, the following fees: every ship shall pay thirty dollars ($30); every bark shall pay twenty dollars ($20); every brig shall pay ten dollars ($10); every schooner shall pay seven dollars and fifty cents ($7 50); every steamboat (tug boats excepted) shall pay five dollars ($5); every steamship shall pay thirty dollars ($30). The resident physician shall return to the secretary of the Board of Health a weekly list of all the vessels inspected by him, as well as all fees collected by him, which shall form a fund for the support of quarantine.

Sec. 35. The resident physician shall have the power, and it shall be his duty, to detain at the quarantine ground, with their cargoes, crews and passengers, all vessels coming from an infected district, or in a foul condition, or having on board persons affected with cholera, yellow fever, pestilential, contagious or infectious diseases, during such time as the Board of Health may deem necessary—to compel the captain to land the sick at the quarantine ground, to fumigate and cleanse all such vessels, and to submit to such rules and regulations as may be hereafter provided by the Board of Health: and that all costs incurred for vessels found in a foul condition, including the sum of five dollars for the support of each and every sick person landed at the Quarantine station, shall be borne by the captain and owners, and shall be paid to the Resident Physician, before a certificate shall be issued giving free pratique.

Sec. 36. The resident physician shall have such other powers as may be delegated to him by the Board of Health, not contrary to the provisions of the acts of the Legislature of the State of Louisiana, necessary to carry them into effect. It shall be his duty to remain at the quarantine ground, attend the sick, and perform all such other duties as may be required of him by the Board of Health.

Sec. 37. The Resident Physician shall have power, at his discretion, to grant permits to persons acclimated and healthy, to proceed to the city. He shall employ such means of purification, disinfection and fumigation of vessels as may be directed by the Board of Health, and shall require the captains or owners of said vessels to defray the *costs of inspection, purification, disinfection and fumigation*, and the Resident Quarantine Physician shall not release the vessel from quarantine until said costs are paid.

Sec. 38. Vessels out ten days from infected ports, presenting clean bills of health, not having nor having had sickness on board, and which are not in foul condition, shall be permitted to pass to the city after thorough fumigation by disinfecting agents; to effect which purpose, the Resident Physician shall detain said vessels as long as the Board of Health may deem necessary. The Resident Physician shall, in all such cases, require evidence under oath; and he shall, by this act, be invested with the power to administer oaths when he may deem this necessary to attain the objects of quarantine.

Sec. 39. It shall be the duty of the Quarantine Physicians, at their respective stations, to enter upon suitable books, furnished by the Board of Health, the following facts with referrence to the vessels inspected:

1. Name of vessel.
2. Name of captain.
3. Tonnage or class of vessel,
4. Port from whence the vessel sailed.
5. Length of passage.
6. Date of sailing

7. Date of arrival at Quarantine Station.
8. Number of days detained
9. Sanitary condition of vessel.
10. Number of cases of disease occurring during the voyage.
11. Number of deaths occurring during the voyage.
12. Number of cases occurring at Quarantine Station.
13. Number of deaths occurring at Quarantine Station.
14. Number and character of fumigations.
15. Sanitary measures instituted.
16. Number of officers.
17. Number of Crew.
18. Number of passengers
19. Sanitary condition of crew.
20. Sanitary condition of passengers.
21. Nature of cargo.
22. Name of consignee.

Said books to be carefully preserved at the different quarantine stations.

Sec. 40. It shall be the duty of the Resident Physicians at the different quarantine stations, to prepare for the use of the Board of Health an annual report, in which the statistics recorded in the books specified shall be consolidated and arranged in accordance with the months of the year.

By order of the Board of Health

Penalties for Violation of Quarantine Acts, Rules and Regulations.

Sec. 41. Every master of a vessel subject to a quarantine or visitation, arriving at the port of New Orleans, who shall refuse or neglect, either, first, to proceed with and anchor his vessel at the place designated for quarantine at the time of his arrival; second, to submit his vessel, cargo and passengers to the examination of the physician, and to furnish all necessary information to enable that officer to determine what quarantine shall be fixed for his veosel at the quarantine ground during the period assigned for her quarantine, and while there to comply with the directions prescribed by the acts of the Legislature of Louisiana, and the rules and regulations of the Board of Health founded thereon, or with such directions prescribed for his vessel, crew and cargo and passengers, by the Resident Physician, shall be guilty of a misdemeanor, and be punished by a fine nor exceeding two thousand dollars ($2000), or by imprisonment not exceeding twelve months, or by both, at the discretion of the court.

Duty of Quarantine Physician to Report to the Attorney General all Violations of Quarantine Law.

Sec. 42. The Resident Physician shall report to the Attorney General all violations of this act; and it shall be his duty to prosecute all persons thus offending; to collect the fines and remit the amount thereof to the Secretary of the Board of Health, whose duty it shall be to keep a separate book for fines collected, to be approved of every three months by the Attorney General.

Duty of Harbor-Masters to Demand Permits of Resident Quarantine Physicians.

Sec. 43. It shall be the duty of the Harbor-Masters, in their respective districts, to demand of the captain of every vessel arriving from sea to New Orleans, the permit of the Resident Physician, and to report to the President of the Board of Health all vessels having entered this port without such permit.

Rules and Regulations Governing the Captains or Masters of Towboats.

Sec. 44. From the first May to first November, all towboats plying from the mouth of the river to New Orleans shall be liable to inspection and quarantine, and it shall be the duty of the different harbor-masters to require from the captains of said towboats the certificate of the Resident Physician; *provided*, nothing here contained shall be so construed as to apply to towboats plying between New Orleans and the quarantine ground and no further.

Sec. 45. The captain of any towboat or steamboat who shall receive on board of his boat, freight, goods or passengers, from a vessel liable to inspection or quarantine, or who shall receive goods or passengers from the quarantine ground, without the permission of the Resident Physician, shall be punished by a fine not exceeding two thousand dollars ($2000) and by imprisonment at the discretion of the court; and all violations of the quarantine laws at the Quarantine Station of the Mississippi River, and at the Rigolets, shall be tried by the Criminal Court of New Orleans, and all violations of this act at the Station of the Atchafalaya River shall be tried by the District Court of the Parish of St. Mary.

Rules and Regulations Governing Pilots.

Sect. 46. The Board of Health shall cause a sufficient number of these Rules and Regulations to be printed and delivered to the pilots to be distributed to the masters of vessels, arriving as before provided.

Sec. 47. Every pilot, or any other person acting as such, shall deliver to the master of every vessel inward bound, one copy of the printed Rules and Regulations of the Board of Health of the State of Louisiana, relative to quarantine, which shall be furnished him by the Board of Health; and any pilot refusing or neglecting so to do, or aiding or landing any person or persons, contrary to the Quarantine Acts, shall forfeit one hundred dollars for every offence.

SANITARY RULES OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA, REGULATING SHIPPING IN THE PORT OF NEW ORLEANS.

At the regular meeting of the Board of Health, April 22d, 1880, the President Dr. Joseph Jones, submitted the preceding and following Sanitary Rules and Regulations, for the regulation of shipping at the quarantine stations and in the port of New Orleans, which were unanimously adopted.

The President was authorized by the Board of Health to cause the publication and distribution of these rules:

OFFICE BOARD OF HEALTH,
STATE HOUSE,
Corner of St. Louis and Royal sts , April 22, 1880.

I. Resolved by the Board of Health of the State of Louisiana, in order to prevent the introduction and spread of contagious and infectious disease, that the President of the Board of Health is empowered to inspect the shipping in the port of New Orleans, either in person or through the Sanitary Inspectors, and to enforce the following rules and regulations :

II. All captains, masters or medical officers of any water-craft, are hereby required to report within twenty-four hours to the President of the Board of Health, all cases within their cognizance of Asiatic cholera, yellow fever, remittent and congestive malarial fevers, typhus or ship fever, scarlet fever, small-pox, varioloid, measles, diphtheria, plague, leprosy, or any other case that may at any time be specified by the Board of Health, and in default or failure to so report such cases, such persons failing or in default shall be liable to a fine not to exceed fifty dollars; provided, however, that the Board may declare it unnecessary to report further cases, when any disease shall have been pronounced epidemic.

III. When it shall be deemed necessary to prevent the introduction and spread of contagious and infectious diseases, every vessel or water-craft, arriving from a foreign port, shall be visited by the President of the Board of Health, or his Deputy Inspectors, between sun-rise and sun-set, as soon as possible after such arrival; and the President or his Deputy Inspectors shall examine the bill of health, and inspect the ship or vessel and require of the captain or master, answers in duplicate to the following questions :

Date of Inspection, New Orleans,.....188

1. Name of Vessel ?
2. Name of Captain or Master ?
3. Tonnage or Class of Vessel ?
4. From whence is the vessel you command ?
5. How many days have you been on the passage ?
6. At what port or ports have you touched ?
7. Were any Contagious or Infectious Diseases prevailing at the port from whence your vessel sailed ?
8. If so, name the Diseases.
9. Were any contagious or infectious diseases prevailing at the port or ports at which you touched ?
10. If so, name the diseases.
11. Was any freight or passengers received at the ports at which your vessel touched ?
12. If so, give particulars.
13. Have you any bills of health ?
14. If so, produce them.
15. During the course of your cruise or passage, what cases of diseases have occurred on board ?
16. At what dates ?
17. Have any deaths taken place on board your vessel since you left the last port ?
18. If so, at what dates and from what causes ?
19. Are there any sick on your vessel at this time ?
20. Has yellow fever, small-pox, cholera or plague ever existed in this ship ?
21. If so, when ?
22. What is the number of officers ?
23. What is the number of the crew ?
24. What is the number of passengers ?
25. What is your cargo ?
26. To whom is the cargo consigned ?
27. What is the present sanitary condition of the vessel, cargo, crew and passengers ?
28. Have you a medical officer ?
29. Give the name of the medical officer ?
30. Produce the reports of the medical officer.

Signature of the Master or Captain.....

Subscribed to before me, an officer,

Witness :

.....Official title.

JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

PREVENTION AND ARREST OF YELLOW FEVER IN THE CITIES AND TOWNS OF THE VALLEY OF THE MISSISSIPPI, AND MORE ESPECIALLY IN THE CITY OF NEW ORLEANS.

The sanitary measures essential to the health of cities situated on the banks water courses, and upon the shores of the Gulf and Atlantic States are :

1. Thorough drainage.
2. Daily removal, from all houses and yards, of garbage, and the disposal of this by composting, far beyond the limits of the city with quick-lime, or by fire, or by dumping into large flowing rivers.

3. Systematic removal of deposits of the contents of privies.

4. Systematic disinfection, at regular intervals, of all privies with a solution of copperas and carbolic acid.

5. Abundant supplies of pure water for drinking, cooking and washing.

6. Systematic house-to-house inspection by intelligent medical officers.

In attempting to combat and arrest yellow fever, it is essential that the first case or cases should be promptly reported to the health authorities.

When the disease becomes scattered in separate foci, its progress is greaty accelerated.

The measures for its arrest are chiefly as follows:

1. Isolation of the sick.

2. Free ventilation.

3. Disinfection by means of copperas and carbolic acid solution or of zinc and iron solutions, as hereafter to be described.

4. Cleansing of all soiled articles in the zinc solution.

5. Daily disinfection of the privies, alleys and drains of the premises.

6. Immediately upon the announcement of the existence of a case of yellow fever, the infected locality, and all the surrounding section of the city, for at least four blocks each way around the focus, should be cleansed; gutters cleaned and limed; privies emptied, and disinfected daily with solution of copperas and carbolic acid; white-washing of all unpainted wood-work, and the ventilation and fumigation by means of sulphurous acid gas, of all crowded houses.

7. When practicable, people should move away from the foci of infection, and even from the city itself, if they have never suffered with yellow fever.

8. In case of recovery, thorough ventilation and fumigation of the entire house. Cleansing of the furniture, floors and walls with soap and zinc solution; disinfection of all bedding and clothing by sulphurous acid gas, followed by heat. The surest method is to destroy the bedding and soiled clothing by fire.

9. In the event of death, the funeral notice should state the cause of death, and there should be no gathering of persons at the funeral. The body should be washed with the zinc and carbolic acid solutions, and should be placed in a close coffin at as early a period as possible, the body being wrapped in sheets saturated with the zinc or lead and carbolic solution.

The bedding and soiled clothing should be destroyed, and if the use of fire is impracticable, they should be disinfected and treated in the same manner as in small-pox.

Thorough cleansing, disinfection and fumigation should be practiced throughout the entire building.

The locality or localities where the first case or cases of yellow fever occur should be kept continuously under observation, and each new case subjected to the measures indicated.

The custom of burying yellow fever corpses within the limits of cities is fraught with danger and is to be condemned.

The proper mode of disposing of the corpses of those who have died of yellow fever is by burning in properly constructed furnaces (cremation).

SMALL-POX.

HISTORY OF SMALL-POX IN LOUISIANA.

Previous to the introduction of vaccination, small-pox committed ravages amongst the early settlers of Louisiana.

The ravages of small-pox are mentioned by historians thirty-five years after the foundation of the colony by Iberville. When Bienville returned to Louisiana, in 1733, after an absence of eight years, his companion, Diron d'Artiguette, thus describes the situation of the colony in a dispatch of the 23d of April, from Mobile: "I have found, on my arrival at this place, two contagious diseases; first, the small-pox, which has carried off and is still killing every day a considerable number of persons of both sexes and of every age; and next, a general dearth of provisions, from which everybody is suffering, and which has been the result of the destruction of the late crop by a hurricane. The colony is on the eve of being depopulated."

Navarro, in a dispatch of December 17, 1787, states that "in this year small-pox infested the whole province of Louisiana, and those whom fear prevented from being inoculated became the victims of their prejudices. All those who were attacked by the contagion either died or were dangerously sick. The inoculation was fatal only to very few, but this was enough to confirm, in their systematic opposition, those who declaimed against this wise and human practice. This disease had struck such terror into the Acadian families that when one of their number was attacked by the disease they used to abandon him to solitude and to his fate, leaving him to his own resources, but supplying him with all the provisions and other articles they supposed he would need, although breaking off all communication with him, and thereby depriving him of their assistance. Some of them, however, who were established in Feliciana, and who numbered eighty persons, of both sexes and of all ages, had the fortitude to have themselves inoculated, and not one of them had cause to repent having taken that determination.

From the author of "Vue de la Colonie Espagnole du Mississippi, en des provinces de la Louisiane et la Floride Occidentale, en l'Aunce 1802," we gather, that, notwithstanding the opposition of the church and government to the practice of inoculation when first introduced into the province, the inhabitants observing the beneficial effects, praeticed it extensively. Finally, the practice became obligatory by legislatue enactments, and even the bishop and clergy withdrew their opposition.

We are not informed as to the date of the introduction of vaccination to Louisiana.

The first edition of Edward Jewner's "inquiry into the causes and effects of the variolæ vaccinæ," a desease discovered in some of the Western counties of England, particularly Gloucestershire, and known by the name of the cow pox, was published in London in 1798; and as far as a careful examination of the earlier histories of Louisiana, and the accounts of the earlier voyages, extending through the period of the Spanish domination extends, the conclusion is reached that vaccination superceded inoculation at a later date than 1802.

SMALL-POX OF COMPARATIVELY RARE OCCURRENCE IN NEW ORLEANS FROM 1803 TO 1861.

From the time of the transfer of Louisiana to the United States, up to the period of the American civil war (1861-1865), New Orleans, as well as the entire State of Louisiana, appears to have been exempt from wide-spread and destructive epidemics of small-pox.

It is true that in 1849, the deaths from small-pox in New Orleans, numbered 133; in 1857, 103; and in 1858, 108; but the total deaths from small-

pox in these three years before the civil war of 1861-1865, in which the disease committed the greatest destruction, did not exceed one-half the deaths of 1864, which numbered 605; of 1866, 613; of 1870, 528; of 1873, 509; 1874, 587; of 1877, when they numbered 1099.

The following record gives the number of deaths from small-pox, in New Orleans, for the years specified:

YEAR.	DEATHS FROM SMALL-POX.	YEAR.	DEATHS FROM SMALL-POX.
1844	----	1864	605
1845	----	1865	613
1846	----	1866	188
1847	27	1867	47
1848	105	1868	14
1849	133	1869	141
1850	37	1870	528
1851	38	1871	2
1852	----	1872	29
1853	17	1873	509
1854	----	1874	587
1855	17	1875	342
1856	2	1876	232
1857	103	1877	1099
1858	108	1878	151
1859	43	1879	----
1860	22	1880	1
1861	1	1881	5
1862	----	1882	415
1863	2	1883 June 1st	924
Total	638	Total	6432
Grand Total, forty years			7070.

During a period of twenty years, 1844–1863, during which, time up to the occupation of New Orleans by the Federal forces, the institution of slavery existed in the Southern States, the deaths from small-pox numbered only 638; whilst in the twenty years, including from 1863 to 1883 (first twenty-three weeks) embracing the period of the abolition of the institution of slavery and the emancipation of the negro race, the deaths by small-pox numbered 6432, out of a grand total of deaths from this disease during forty years of 7070.

Preceding the civil war the deaths from small-pox corresponded more nearly in the white and colored races to the relative numbers of the population.

Thus, in 1849, the deaths from small-pox in New Orleans were: whites, 78; colored, 55; total, 133; 1850, whites, 25; colored, 12; total, 36; 1853, whites 14; colored, 3; total, 17; total during three years, whites, 117; colored, 70; total, 187.

During the period of slavery the deaths from small-pox among the whites largely exceeded those among the negro race. The reverse condition has existed and does now exist since the civil war of 1861-65.

Thus, in 1877, the deaths from small-pox in New Orleans were—whites 437, colored 662; total 1099; 1878, whites 69, colored 82; total 151; 1881, whites 1; 1881, whites 3, colored 2; 1882, whites 116, colored 299; total 415; first twenty-three weeks 1883, whites 354, colored 580; total 924.

During a period of about six and a half years—1877, June 9th, 1883—out of a grand total of deaths in New Orleans from small-pox of 2505, the whites numbered 970, and the colored 1625.

Whilst the colored population was in the relation of about 1 to 3 of whites, the deaths from small-pox were as very nearly 2 colored to 1 white.

This leads us to consider one of the most important questions, not merely to the city of New Orleans, but also to every Southern city and State.

The difficulty of eradicating small-pox from New Orleans greatly increased in consequence of the vast number of unvaccinated colored people inhabiting the States tributary to the Mississippi.

This proposition will be illustrated by the following table:

White and colored population of the State most nearly related to New Orleans by geographical position and commercial relations. Tenth Census U. S., 1880.

POPULATION.

STATES.	TOTAL.	WHITE.	COLORED.
Alabama	1,262,288	662,185	600,103
Arkansas	802,197	591,531	210,666
Kentucky	1,648,630	1,377,179	271,451
Louisiana	938,609	454,954	483,655
Mississippi	1,129,689	479,398	650,291
Missouri	2,168,176	2,022,826	145,350
Tennessee	1,541,982	1,138,831	403,151
Texas	1,590,621	1,197,237	393,384
Total	11,082,192	7,914,141	3,158,051
Total population United States, including Territories, 1880	50,155,783	43,402,970	6,580,793

From the preceding statistics it is evident that:

1. In those States which are not nearly related to New Orleans by geographical position and commercial relations, the white population numbers 9,086,741 out of a total population of the United States of 50,153,783, being about one-fifth; the colored population numbers 3,157,997, out of colored population, in the United States of 6,580,793, being about one-half.

2. Whilst only one-fifth of the total population of the United States inhabits the States of Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Missouri, Tennessee and Texas, nearly one-half the entire negro population of this great country is gathered within the borders of these States, which are most directly connected with New Orleans by geographical position and commercial relations.

3. The colored population of the States most nearly related to New Orleans, constitutes more than one-third of the entire population, and is related to the whole as 1 colored to 2.46 whites.

4. Before the civil war of 1861-65 small-pox was comparatively unknown upon the plantations of the South, because the negro was born in a state of slavery, and compulsory vaccination and the isolation of the sick in special hospitals, under the direction of intelligent medical men, were almost universally enforced by the white master. The result of the civil war, precipitated the dependent, uneducated and comparatively helpless colored race into the enjoyments of the rights and privilages of freedom. It is not surprising that ignorance of sanitary laws, and neglect of vaccination, combined with unrestricted intercourse, should have found in the colored race of the South the most favorable condition for the lodgement, propagation and spread and continuance of small-pox.

Small-pox holds firmly to New Orleans, and it is with difficulty vanquished on account of the large colored population gathered within her limits, as will be seen by a comparison of the statistics of race in the large cities of the United States.

Population of the principal cities of the United States by race, according to Tenth Census, 1880:

POPULATION.

STATE.	CITY.	TOTAL.	WHITE.	COLORED.
New York	New York	1,206,299	1,185,843	19,663
New York	Brooklyn	566,663	558,427	8,095
New York	Buffalo	155,134	154,268	857
New York	Albany	90,758	89,694	1,056
New York	Rochester	89,366	88,859	497
New York	Troy	56,747	56,185	557
New York	Syracuse	51,792	51,199	590
Pennsylvania	Philadelphia	847,170	815,362	31,699
Pennsylvania	Pittsburg	156,389	152,292	4,077
Illinois	Chicago	503,185	496,495	6,480
Massachusetts	Boston	362,839	356,826	5,873
Massachusetts	Lowell	59,475	59,293	177
Missouri	St. Louis	350,518	328,191	22,256
Maryland	Baltimore	332,313	278,584	53,716
Ohio	Cincinnati	255,139	246,912	8,179
Ohio	Cleveland	160,146	158,084	2,038
California	San Francisco	233,959	210,496	1,628
Louisiana	New Orelans.	216,090	158,307	57,617
Louisiana	Baton Rouge	7,197	2,915	4,282
Louisiana	Shreveport	8,009	3,219	4,790
District of Columbia	Washington	147,293	98,895	48,377
Kentucky	Louisville	123,758	102,847	20,905
Rhode Island	Providence	104,857	101,211	3,582
Virginia	Richmond	63,600	35,765	27,832
South Carolina	Charleston	49,984	22,699	27,276
Tennessee	Memphis	33,592	18,677	14,896
Tennessee	Nashville	43,350	27,005	16,337
Texas	Galveston	22,248	16,884	5,348
Georgia	Atlanta	37,409	21,079	16,330
Georgia	Savannah	30,709	15,041	15,654

It will be observed from the preceding statistics that New Orleans h a larger colored population than any other city on the North Americ Continent.

The colored population of New Orleans actually exceeds the united su of the colored population of New York, Philadelphia and Boston.

In virtue of this fact, New Orleans has the largest population of any ci in the United States opposed to vaccination, and consequently the large population liable to the ravages of small-pox.

We have also shown that no city on this continent has as large a color population tributary to it.

A vast floating colored population continuously pours in and out of N Orleans.

Large numbers of colored seamen (roustabouts,) man the steambo which conduct the internal commerce of this great valley, and they are a have been during the past ten months, introducing a stream of small-p poison into New Orleans.

Small-pox has been prevailing on the plantations along the Mississi River during the past ten months, and small-pox cases have been conti ously introduced into New Orleans by the inhabitants of the plantatio

As long as small-pox prevails among the colored population of the Mis-ssippi Valley just so long this disease will continue to find successive dgments in New Orleans.

In the month of September, 1882, I directed the attention of this honored oard to the fact that the State of Mississippi was dangerously infected ith small-pox, and in proof thereof submitted the following communica-on from the Secretary of the Mississippi State Board of Health.

MISSISSIPPI STATE BOARD OF HEALTH,
Office of Secretary, Jackson, Mississippi.
September 21, 1882.

seph Jones, M. D., President Board of Health, State of Louisiana:

Dear Sir—"I have the honor to acknowledge the receipt of yours of yesterday, and in ply will state that reports received at this office show that twenty-three cases of small-x have occurred in and near McComb city. We have been informed of only two ses having occurred in McComb city, the remainder being in a settlement called Algiers, out one mile southwest of the town. One case has also been reported near Chattawa the same county (Pike). * * * * * * *

"One hundred and fifty-three cases of small-pox have occurred in Bolivar county on ne plantations near Australia landing and Concordia, and twenty-five cases have oc-rred in De Soto county.

Respectfully,
WIRT JOHNSON, M. D.,
Secretary Mississippi State Board of Health.

Small-pox has prevailed in Memphis, Tennessee, and Nashville, and in rious other portions of Tennessee, but as Mississippi and Tennessee do t publish daily and weekly reports of mortality, this Board has had no curate or reliable data by which to estimate the progress and location of all-pox in these States during any specific period of time.

The period during which the poison of small-pox lies dormant in the stem, after contact with the disease is twelve days, followed by two days fever which are followed by the appearance of the characteristic eruption, that people infected with the poison of small-pox may travel from Cincin-ti, Chicago, St. Louis, New York, or Philadelphia, before manifesting y signs of this dreadful disease.

The Board of Health has been powerless to prevent the constant influx negroes and of all classes of citizens into New Orleans, and has offered e most effectual barrier in its power, namely *free vaccination.*

Immediate and universal house-to-house vaccination and re-vaccination e the only bulwarks of safety.

Whenever a case of small-pox is reported the force of medical men em-oyed by the Board of Health should be sufficiently large to allow of an mediate detail of a vaccine physician to make the infected house a centre, d to vaccinate and re-vaccinate all persons on the infected premises and persons within a radius of two blocks of the case, north, south, east and st.

The Board of Health has endeavored, with the limited force at its com-nd, to accomplish this result, but at least twenty vaccine physicians ad-ional to the six sanitary inspectors should be employed for the space of h time as should meet the present emergency.

It has been the experience of sanitarians here and elsewhere that in com-tting small-pox the expenses have been and ever will be necessarily large, l should include:

Pay of extra vaccine physicians
Cost of vaccine virus.
Removal of patients to small-pox hospital.

Support of indigent patients in small-pox hospital.
Burial of the dead.
Disinfection of houses.
Destruction of infected articles, beds and bedding.
Purchase or hire of horses, wagons and supplies for sanitary inspectors.

We may form some estimate of what a proper system of combatting small-pox in New Orleans should cost by a reference to the amount of money expended by Baltimore during the past year.

From the report of George W. Benson, M. D., commissioner of health and registrar of the health department of the city and port of Baltimore, we gather that the whole number of cases reported in the year 1882 was 2825.

During 1882, 90,000 vaccinations and re-vaccinations were performed in Baltimore by ten regular vaccine physicians and twenty extra physicians.

From table twelve of the annual report of the Health Department of Baltimore for the year 1882 we gather that $51,603 72 were expended in combatting small-pox alone, the entire sum being promptly met by the city government, a sum far in excess of the receipts of the Board of Health of the State of Louisiana by which the entire quarantine system of this State is supported.

The commissioner of health and registrar of the city of Baltimore thus estimates the expenses for 1883:

General health	$20,000 0
General health (indebtedness)	19.584 2
Nuisances and sewers	6,000 (
Salaries	31,000 (
Post mortem	6,000 (
Quarantine hospital	25,000 (
Quarantine hospital (indebtedness)	854
Ten additional vaccine physicians	3,000 (
Extra expenses of small-pox	100,000 (
Total	$206,639

It appears from this report that the actual amount expended by the city of Baltimore for health purposes, exclusive of the assistance rendered by the regular police force during the year 1882, was as follows:

Salary account, twelve months 1882	$14,500
General health account, including small-pox expenses	51,606
Nuisance and sewer account	14,000
Account of the Quarantine Hospital of the port of Baltimore	23.011
Total	$103,118

The City Council of New Orleans appropriated $6000 (six thousand dollars) for sanitary purposes in 1883, and refuses to pay for the registration of its indigent dead. Baltimore appropriates more than one hundred thousand dollars,and yet she is not exposed to one-tenth of the danger that New Orleans is in from small-pox.

It has been demonstrated by past experience that small-pox appears in large cities at intervals of eight or ten years, as the sequel of neglect of general vaccination; hence the prevention and non-existence of small-pox in New Orleans can only be accomplished by general annual and successful vaccination and re-vaccination, conducted by a corps of competent physicians, one or more of whom should be stationed in each ward and liberally supplied with fresh vaccine virus.

RELATIONS OF SMALL-POX IN NEW ORLEANS TO TEMPERATURE AND SEASONS.

The following tables illustrate the relations of the cases and deaths from small-pox to the individual months of the years specified.

NUMBER OF CASES OF SMALL-POX

Which Occurred in New Orleans During a Period of 11 *Years,* 1872–1882 (*inclusive*) *by months.*

Months.	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	Total.
January	6	154	154	93	39	306	34	1	....	..	14	801
February	2	194	196	152	69	372	45	1	....	1	29	1061
March	7	220	203	240	44	502	82	3	....	...	151	1452
April	23	184	248	132	63	327	50	1	....	4	180	1212
May	9	160	230	90	31	236	23	1	1	1	194	976
June	3	75	141	83	22	190	18	1	....	...	185	718
July	....	21	65	56	22	83	5	....	....	....	70	322
August	...	8	12	39	8	46	...	1	....	..	48	162
September	1	15	13	7	8	32	1	..	....	...	32	109
October	1	14	8	7	31	28	..	...	....	..	45	134
November	10	108	23	19	82	10	..	..	....	4	41	297
December	36	146	45	17	167	11	1	...	....	12	104	539
Total	98	1299	1338	935	586	2143	259	9	1	22	1093	7783

DEATHS FROM SMALL-POX IN NEW ORLEANS

During a Period of Sixteen Years—1867 *to* 1882, *Inclusive.*

Months.	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	1880	1881	1882	Total
January	9	....	3	69	2	....	64	82	32	8	126	13	....	....	....	6	414
February	13	....	1	56	....	2	83	89	44	25	191	20	....	....	....	10	534
March	5	....	1	121	....	5	79	99	94	22	260	52	....	....	....	60	798
April	6	....	2	122	....	5	67	97	62	25	157	21	....	....	1	72	637
May	6	....	....	78	....	4	71	98	26	11	105	12	....	1	1	69	482
June	5	....	5	59	....	1	35	66	30	13	137	18	....	....	....	69	438
July	1	....	....	14	....	....	11	30	24	15	56	5	..	....	....	31	187
August	1	....	1	4	....	....	2	6	14	6	22	....	....	....	....	18	74
September	1	....	1	3	....	....	7	6	4	3	16	....	....	....	....	15	56
October	....	....	5	....	....	1	8	3	4	8	13	....	....	....	....	16	58
November	....	....	33	1	....	....	27	12	1	24	7	....	....	....	....	11	116
December	....	....	89	1	....	11	55	17	7	72	9	....	....	....	3	38	302
Total	47	14	141	528	2	29	509	605	342	232	1099	141	....	1	5	415	4110

CASES AND DEATHS OF SMALL-POX IN NEW ORLEANS IN 1882,

Classified According to the District in which they Occurred, Color and Sex.

Months.	1st Dist.			2d Dist.			3d Dist.			4th Dist.			5th Dist			6th Dist.			7th Dist.			Total.			Sex.		No. of Deaths.		
	W	C	Total.	W	C	Total.	W	C	Total.	W	C	Total.	W	C	Total.	W	C	Total.	W	C	Total.	W	C	Total.	Male.	Female.	W	C	Total.
January	1	3	4	..	3	3	3	3	6	...	...	..	...	...	..	1	...	1	...	...	..	5	9	14	9	5	1	5	6
February	..	8	8	3	1	4	6	10	16	...	...	..	...	...	..	...	1	1	...	...	..	9	20	29	19	10	3	7	10
March	7	23	30	10	30	40	30	40	70	1	...	1	4	4	8	...	1	1	...	1	1	52	99	151	90	61	11	49	60
April	8	28	36	21	33	54	32	47	79	...	1	1	3	6	9	...	1	1	...	...	..	64	116	170	107	73	24	48	72
May	10	19	29	17	37	54	35	67	102	1	...	1	2	3	5	...	3	3	...	...	..	65	129	194	89	105	17	52	69
June	11	7	18	17	39	56	37	61	98	1	1	2	...	10	10	1	...	1	...	...	..	67	118	185	87	98	22	47	69
July	3	4	7	12	9	21	10	13	23	6	4	10	...	6	6	...	3	3	...	...	..	31	39	70	40	30	13	18	31
August	..	10	10	3	2	5	5	17	22	...	1	1	5	4	9	...	...	..	...	1	1	13	35	48	25	23	6	12	18
September	..	3	3	1	3	4	5	14	19	...	...	..	2	4	6	...	...	..	...	...	..	8	24	32	13	19	1	14	15
October	..	16	16	..	1	1	5	20	25	1	..	1	...	1	1	...	...	..	...	1	1	6	39	45	20	25	1	15	16
November	7	13	20	..	...	...	1	12	13	..	3	3	...	...	..	...	...	..	..	5	5	8	33	41	16	25	3	8	11
December	25	17	42	2	2	3	12	9	21	21	15	36	...	...	..	...	..	..	...	2	2	60	44	104	50	54	14	24	38
Total	72	151	223	86	159	245	181	313	494	31	25	56	16	38	54	2	9	11	..	10	10	388	705	1093	565	528	116	299	415

If the year 1874 be selected during the years embraced in the preceding table for critical study, we observe the following relation between the number of deaths from small-pox and the monthly mean temperature:

Months.	Deaths from Small-Pox.	Mean Temperature Fahrenheit.	Months.	Deaths from Small-Pox.	Mean Temperature Fahrenheit.
January	82	56.70	July	30	82.03
February	80	59.05	August	6	85.05
March	99	67.08	September	6	80.04
April	97	66.02	October	3	70.09
May	98	76.09	November	12	64.01
June	66	82.06	December	17	89.04

From the preceding facts it is evident that the poison of small-pox in New Orleans, and in all localities situated in the same latitude, appears to be intensified by cold and dissipated by heat.

The intense heat of summer appears to cause the rapid alteration and destruction of the organic matters causing the disease.

Small-pox in this latitude is least prevalent in those months in which the various form of malarial fever and yellow fever commmit their greatest ravages.

MEASURES FOR THE PRESERVATION OF THE PUBLIC SAFETY.

Those charged with the conduct of the sanitary affairs of New Orleans are compelled to recognize the following facts:

(a) New Orleans has a population of about 60,000 colored people, a large proportion of whom are unprotected by vaccination. These people are a standing menace to their neighbors with reference to small-pox.

(b) New Orleans is without a marine hospital for the treatment of the seamen of the United States afflicted with small-pox and other contagious and infectious diseases.

The measures now imperatively demanded for the preservation of the publict safety are:

1. The selection of a proper site for a small-pox hospital in an isolated locality.
2. The erection of the necessary buildings adapted to the isolation and treatment of small-pox patients.
3. The proper equipment of the hospital buildings with beds, bedding, culinary utensils, and facilities for purification, washing, disinfection and isolation.
4. The supply of competent and reliable nurses.
5. The establishment of rigid police regulations.
6. The perfection and regulation of a definite mode of conveyance of small-pox patients to the hospital under the direction of competent sanitary officers.

The honorable City Council should take immediate steps for the erection of the necessary buildings for the isolation and treatment of small-pox patients. These buildings need not be expensive, but on the contrary should be light, well-ventilated, wooden frame and unsealed pavilions quickly erected, and capable of easy cleansing, white-washing or disinfection.

The Board of Health will co-operate with the honorable City Council in any and every measure for the prevention and arrest of small-pox.

7. New Orleans, and in fact the entire State of Louisiana is without any proper hospital accommodations for the isolation and treatment of small-pox, and other contagious and infectious diseases.

The permanent small-pox hospital for New Orleans, should be located in a secluded, but readily accessible position, as nearly opposite the centre of the city as possible; it should be so arranged as to secure the fullest ventilation, the most healthful conditions to its inmates, and least possible danger of infection to the surrounding inhabitants. The hospital should be elevated at least four feet above the ground, so as to allow of free ventilation beneath; the ground upon which its supports rests, should be filled with charcoal cinders and covered over with asphalt, to prevent, on the one hand, all exhalations from the soil, and on the other, the absorption of all noxious matters from the inmates; the structure should be limited to one story, for in the light of existing medical and sanitary knowledge and experience, it is dangerous and unwise to construct a contagious disease hospital more than one story high.

Ample room should be afforded for the construction of well ventilated detached buildings, and for the physician's office, drug room, provision house, kitchen, wash house, laundry, dead house and cemetery. The dead should not be carried through the city, but should be buried or cremated upon the hospital grounds, or in their immediate vicinity.

The detached hospital buildings should not be larger than to contain more than twelve patients each. The wards should be so arranged that each patient should have 2000 cubic feet of space, 144 square feet of floor space, and 3000 cubic feet of fresh air per hour.

Each of the wards should be ventilated by one or more iron pipes, at least twelve inches in diameter, running from the centre of the ceiling up through the roof, in the lower ends of which a flame of gas, or of some other inflammable material should be kept constantly burning, in order to burn up, oxydize and destroy all contagious matters in the atmosphere. The ventilation thus secured should effect a frequent change of atmosphere in the ward, so as to give each patient 3,000 cubic feet of fresh air per hour.

The means for the disinfection of clothing, beds and bedding, by means of sulphurous acid, chlorine, and super-heated steam should be ample. The ambulances for the transfer of patients from various portions of the city, should be conducted with the greatest care; should be thoroughly disinfected and cleansed daily; and should, together with the horses and drivers, be kept upon the hospital grounds, subject to the call of the proper authorities for the removal of small-pox patients from any portion of the city, and at any time, by night or by day.

The entire grounds should be surrounded by a wall, with but two openings, one for entrance and the other for exit; and should at all times be under careful police superveillance, to prevent improper and unnecessary communication with the surrounding inhabitants.

MEASURES FOR THE ARREST AND PREVENTION OF SMALL-POX IN LOUISIANA.

1. Compulsory Vaccination.

This measure alone is effective. Small-pox will evade every barrier of quarantine in large commercial centres. Its poison may be brought in numberless forms of merchandise, and in the clothing of passengers. It will remain thus concealed for months, and there is no practicable means

by which the foul and deadly poison thus concealed can be detected by the sanitary inspector. The greed of commerce is so great, that it will be secreted in the holds and forecastles of ships. Officers will hide men away sick with small-pox, and resort to subterfuge for their concealment, in order to avoid quarantine detention, and will for the sake of filthy lucre, jeopardize the lives of their fellow citizens.

Another reason why vaccination should be compulsory is, that the incubation period of the small-pox poison may embrace from seven to fourteen days; and one having the poison in his system, might travel from Boston, New York, Philadelphia, Richmond, Cincinnati and Chicago to New Orleans, and yet transport or present upon his arrival no visible marks of the disease.

As a rule small-pox manifests itself on the twelfth day, by fever severe pain in the head and back and nausea. Two days afterwards the eruption appears in red pimples, with a hard shot-like base, which in due time develope into vesicles, at first rounded, then depressed, or umbilicated, afterwards into pustules, which finally become scabs and fall off, leaving pock marks.

Many pathologists regard small-pox as not contagious during the first two days of fever, headache, backache and nausea; and some even hold that the disease does not become contagious till the eruption passes into the umbilicated vesicolar stage.

The physician who has been warned by the primary fever and first popular eruption, should lose no time in isolating the case, and in immediately vaccinating all in the house and in the neighborhood. For twelve days after exposure, patients, although having the small-pox poison in their bodies, will not communicate the disease, and they should be encouraged by the well known fact that vaccination promptly performed with fresh and reliable matter will in most cases arrest the disease, and in some cases, if the disease does appear, it will assume the comparatively mild and harmless form of varioloid.

Vaccination, well performed, with reliable virus will, in virtue of its shorter period of incubation, either wholly prevent small-pox by supplanting it, or at least modify it into varioloid when resorted to within three days after infection.

At a meeting of the Board of Health of the State of Louisiana, held on November 8, 1877, Dr. Samuel Choppin in the chair, I offered the following resolutions:

Resolved, That in consequence of the existence and destructive effects of small-pox in the city of New Orleans during the past ten years, the attempt should be made to circumscribe and arrest this disease by the proper sanitary regulations and legislative enactments.

Resolved, That the representatives of the people are empowered to enact suitable laws for the arrest and complete eradication of small-pox, and that it is as much the duty of the government to protect its citizens from this disease as to exclude the introduction of foreign pestilence by quarantine regulations.

Resolved, That a committee of three physicians, members of the Board of Health of the State of Louisiana, be appointed to address a memorial to the Legislature of Louisiana, urging the necessity of compulsory vaccination.

Similar resolutions were also urged upon the State Medical Association and the subject was brought before the General Assembly, and after discussion, the bill embodying the resolutions was defeated, and compulsory vaccination was discarded, and the following adopted:

"No. 80. An Act to reorganize and render more efficient the Board of Health of the State of Louisiana," etc.; approved April 20th, 1877.

"SEC. 3. *Be it further enacted, etc.*, That said Board shall have power and authority to make all needful rules, regulations and ordinances upon the subject of vaccination within the parish of Orleans; provided, that nothing in this Act shall be construed to render vaccination compulsory; the said Board shall encourage vaccination, and shall furnish pure and fresh vaccine matter to the district sanitary inspectors and city physicians for the purpose of gratuitous vaccination, and the furnishing of such vaccine matter shall be paid by the said Board of Health."

I then held, and still hold, that "each unprotected inhabitant who neglects, or willfully refuses vaccination, is a source of constant danger to himself, to his family, to his neighbors, and the whole community; and the State has the power and the right to institute at the hands of competent medical men, compulsory vaccination."

The true theory of a democratic form of government, is the equal protection of the life, property, and happiness of all citizens, by wise and just laws, and the absolute subjection of all, both the *governors* and the *governed*, to *law*.

Compulsory vaccination, in that it protects all alike from pestilence, suffering and death, is truly a democratic measure, designed to bestow the greatest freedom, and the greatest happiness upon all alike, regardless of place or position or race.

I advocated then and do now advocate:

(a). The establishment of depots of reliable and fresh vaccine, at central points in the city of New Orleans, and throughout the entire State of Louisiana.

(b). The appointment of one or more responsible physicians, in each Congressional District, by the Board of Health, to be commissioned by the General Assembly of the State, as Superintendents of Vaccination. Said superintendents of vaccination should be appointed by, and act under the direction and control of the State Board of Health.

It should be the duty of each superintendent of vaccination to make an accurate census of his district, and record the number of vaccinated and unvaccinated inhabitants; and also those who have suffered with small-pox in the natural way. It should be the duty of superintendents of vaccination to vaccinate all those who have not been vaccinated, or who have not suffered with the small-pox; an annual census of each district, together with the total number of cases of small-pox, varioloid and successful vaccinations, to be annually furnished the Board of Health of the State of Louisiana.

The measures which have been instituted are as follows:

1. The quarantine officers have been ordered to conform to the rules and regulations of the Board of Health, and the acts of the Legislature, and bring vessels to anchor, and to put each captain or master upon his oath before mustering the men on deck.

All cases of small-pox are removed to the Quarantine Hospital, and the entire verew accinated. The vessels thus infected are subjected to thorough fumigation and vaccination, and are not released until from fourteen to twenty-one days have elapsed without the occurrence of a case of small-pox.

2. Each case of small-pox in New Orleans, when reported, is visited by a Sanitary Inspector, and all persons within a radius of three or four blocks are offered free vaccination.

3. The law with reference to the vaccination of the children in the high schools is enforced.

4. The issuance of circulars to physicians, directing their attention to the law which requires the immediate report of each case of small-pox.

5. The institution of free vaccination at a stated hour each day at the offices of the Sanitary Inspectors in each district of the city.

6. The issuance of circulars to all railroad managers, etc., urging vaccination with their operators and employees.

7. Designation of all infected houses by the yellow flag with the word small-pox displayed.

8. The prevention, as far as practicable, of ingress and egress to houses infected with small pox.

9. Prevention of gatherings at funerals.

10. Disinfection, cleansing and fumigation.

11. Destruction of infected bedding and clothing. Vaccination is the only means of salvation from the small-pox at the command of all, and but for this beneficent gift of the medical profession, the United States would lose by the present epidemic at least 10,000,000 inhabitants.

NATURAL HISTORY OF SMALL-POX—FACTS ESSENTIAL TO THE SANITARIAN.

The following outline, drawn up not merely from personal experience, but from the writings and investigations of the most eminent medical men, are recorded for the information of the citizens under the immediate care of the sanitary officers of the Board of Health.

SMALL-POX.—DEFINITION.

Small-pox is the result of a specific morbid poison, which, after an incubative period of about thirteen days, produces an acute specific infectious disease, characterized by sudden and severe fever, which, after forty-eight hours, is followed by an eruption of pimples on the forehead, face and wrists, gradually passing over the body. This eruption is followed by a fall of temperature, and in from ten to fourteen days, it passes through the stages of vesicle, pustule and crust; it also appears on certain mucous membranes, and is sometimes complicated with hæmorrhage into the skin and from the mucous surfaces. The eruption is sometimes preceded by rashes of an erysipelatous, scarlet or measley character, chiefly seen on the lower abdomen, the groins and the upper and lower parts of the thighs, also the sides of the chest and about the axilla. They are distinguished from the hæmorrhagic rashes by the absence of blue-black spots, and are usually associated with the milder cases.

ÆTIOLOGY.

The origin of small-pox is unknown; but at the present time it is propagated by contagion and inoculation. No climate is free from its ravages; it affects all races of men, every age and both sexes It is exceptionally severe among negroes and the inhabitants of warm climates generally. Its subjects are unvaccinated or badly vaccinated persons. As a rule it attacks the same person once only, but there are exceptions to this rule.

VARIETIES OF SMALL-POX.

1. *Discrete.* In this form the eruption is most abundant on the forehead, face and wrists, and least on the limbs and back. In the discrete form fatal results are extremely rare, except in unvaccinated children under one year.

2. *Confluent.* In this form, the eruption instead of showing distinct closely packed pustules, the whole face is swollen, presenting the appearance of a tense elastic mask.

In the confluent form more or less delirium is present in many cases, and it is sometimes maniacal or suicidal in character; the patient should not be left for one moment alone, otherwise he may have to be looked for wandering along some street, or drowned in the nearest body of water. In unfavorable cases, death usually takes place about the eleventh day.

The mortality in this form is heavy; half of the confluent cases die about the eleventh day.

3. *Hæmorrhagic, pustular or vesicular.* This form is characterized by hæmorrhage into the skin beneath the vesicles or pustules. There are generally petechiæ, sometimes ink-spots, and often subcutaneous hæmorrhage. Death is almost always the result, and it may take place in the vesicular or the pustular stage.

4. *Malignant.* (Variola nigra; variola hæmorrhagica; black small-pox; purpura variola).

This form is invariably fatal. Its distinguishing features are hæmorrhage into the skin, and irregularity in the form of the eruption. The illness commences with the ordinary symptoms, but accompanied by marked lumbar pain, precoidial anxiety and coolness of the extremities. This is followed about the third or fourth day by ecchymosis into the conjunctiva, and a purpuric or scarlatina form of rash, sometimes covering the whole body, but most marked over the lower abdominal region, and the upper and inner parts of the thighs, in which rash, large and small dark blue, deep violet, or black spots are seen. The ordinary eruption is sometimes entirely absent, or when present is very meagre and much modified. There will also be found upon the skin hard tumors, of variable size, of the same color as the spots. Hæmorrhages occur from the mouth, stomach, lungs, kidneys, uterus and vagina. Death sometimes takes place as early as the third day, most commonly on the fifth, rarely later than the seventh.

5. *Inoculated.* Small-pox induced by inoculation is comparatively mild, and it protects from the disease. The objections to inoculation are: 1st. That small-pox so induced is infectious, and the process propagates the disease to surrounding individuals. 2d. That it is sometimes fatal.

6. *Small-pox after vaccination and re-vaccination.* Good vaccination protects from small-pox, and when it does not protect absolutely it renders the disease milder, the disfigurement less marked and reduces the mortality as the efficiency of vaccination and re vaccination. After successful re-vaccination small-pox is practically unknown.

PROGNOSIS.

Small-pox is most fatal in unvaccinated children under five, and in adults over thirty. At those periods of life half or more die. The lowest mortality in the unvaccinated occurs from ten to fifteen. The discrete form is rarely fatal in adults, the great majority of cases recover, but it is occasionally fatal when it occurs in unvaccinated children.

Half of the confluent cases die about the eleventh day. The malignant cases invariably die. Nearly all children under one year of age die, whatever form the disease may assume. In small-pox modified by vaccination, the course of the disease will depend upon the quantity and quality of the same, as shown by the marks. If these be of the best kind, three or four in number, and in a patient under fifteen, the disease is invariably mild. In some, however, who have past puberty, the best primary vaccination

loses its power; but, nevertheless, it almost invariably modifies the disease, and when death occurs it is usually due to some accidental complications. As regards vaccination in prognosis, it may be stated generally that the unvaccinated will die at the rate of fifty per cent., the badly vaccinated at the rate of twenty-six per cent., and the well vaccinated at the rate of 2.3 per cent.

TREATMENT.

There is no specific for small-pox.

The so-called specifics and prophylactics or preventives prove of no value, and their advocates and vendors mislead the public and cause fatal neglect.

The treatment of small-pox must be conducted on general principles; and the public should rely upon the well educated practitioners of medicine.

The following points of interest, however, should be impressed upon those who may meet this fatal disease in their own houses:

1. The patient should be isolated from the rest of the family and household. He should be placed in a large, well-ventilated room. He should be fed at intervals on easily digested food, such as milk, beef-tea, chicken broth, and eggs beaten up; and occasionally, according to habit, a little wine or spirit may be given. He should be permitted to drink cool water, or cool lemonade, as he pleases. There should be two soft beds in the room, so that the patient may be changed daily.

2. The hair should be cut short. Heat of skin may be relieved by cold water sponging, and the swelling of the eyelids and other painful parts by the constant application of cold compresses. To relieve itching, and at the same time to facilitate the removal of scabs and moderate the filling, the surface may be anointed with pure olive oil, cold cream, simple cerate, or better still, a mixture composed of equal parts of cosmoline (vaseline) and simple cerate.

3. Two competent nurses (unsusceptible by vaccination or by previous attacks of small-pox) should be obtained, one to attend the patient by day and one by night, and they should never for one moment lose sight of him. The medical treatment should be conducted by the physician.

4. The patient cannot safely be discharged until the crust and scabs have disappeared, and not less than six baths have been given at intervals of two days.

VACCINATION.

(Vacca—a Cow.)

The object of inoculation with the material of vaccine or the cow-pox, as applied to the human subject, is the protection of the person vaccinated from an attack, and especially from a severe or fatal attack of small-pox.

PHENOMENA OF VACCINATION.

When lymph taken from a vaccine vesicle at that period of its course when the vesicle is fit for the purpose, is inserted into the skin by puncture or applied to a small abraded surface of the skin of an unprotected person no particular effect is noticeable till about the end of the second or earlier part of the third day, when a slight papular elevation becomes perceptible.

The papular elevation of the fifth or sixth day becomes a distinct vesicle of a bluish white color, with raised edges, and central cup-like depression. By the eighth day (the day week from that on which the lymph was inserted), it has attained its perfect growth; it is then plump, round, more decidedly pearl-colored, and distended with clear lymph; its margin i

m and central depression very marked. On this day, or sometimes even the end of the seventh day, a ring of inflammation, called the areola, gins to form about its base, and the vesicle and areola together begin to read for the next two days. The areola is circular, and when fully developed has a diameter of from one to three inches, being then often attended with considerable hardness and swelling of the adjacent connective ssue. After the tenth day the areola begins to fade, and in two or three ys more it has usually disappeared, with whatever of hardness or swelling may have existed. With the decline of the areola the vesicle begins dry in the centre; the lymph remaining in it becomes opaque and gradually concretes; and by the fourteenth or fifteenth day a hard brown scab formed, which gradually contracts, dries and blackens, and from the entieth to the twenty-fifth day, but usually about the twenty-first day, lls off. There is then left a cicatrice, which is circular, somewhat depressed, sometimes radiated, and with rare exceptions, permanent in after e.

The constitutional symptoms attending these local phenomena are a rise temperature, sometimes detectable by thermometer as early as the urth day, more marked but still often very slight from the fifth to the venth day; more obvious feverishness, with restlessness and frequently rangement of the stomach and bowels, from the eighth to the tenth day, at is, during the stage of the areola, subsiding as that subsides.

RE-VACCINATION.

The regular phenomena of vaccination can in some persons be produced ly once in a life time; but this is not always the case, and vesicles may produced by a second vaccination, not distinguishable in appearance m primary vesicles, though usually having a smaller and more transitory eola. Frequently the result of re-vaccination is the production of a urious papular acuminated vesicle with hard, irregular areola, reaching height about the fifth or sixth day, and having by the eighth day an perfect scab, which soon falls.

PERFORMANCE OF VACCINATION.

Small-pox being a disease to which persons are liable from the moment birth, and which is peculiarly fatal in infancy, it is of great importance t vaccination should be performed very soon after birth.

Healthy children should be vaccinated within four or six weeks from th. If the children be not robust, it may be deferred for three or four eks more.

When small-pox occurs in the immediate locality, or invading the household, all the inhabitants and inmates should be vaccinated and re-vaccinated espective of age or physical condition.

Under such circumstances no age is too early for vaccination, and no state health can be held to contraindicate it. *Life, then, depends* on the mptitude with which the vaccination is done.

As the small-pox poison requires a period of about thirteen days, for its cubation, and as the vaccine disease manifests its phenomena in three ys, and is fully formed on the eighth day after vaccination, the physician s the power of protecting from small-pox even after actual exposure to poison, by prompt vaccination.

SELECTION OF LYPMH.

Lymph may be of two kinds, bovine or human. The advantage imed for bovine lymph, are immunity from human disease and greater tection from small-pox.

In the selection of lymph, whether bovine or human, the important point is to select healthy subjects, and it is probably as easy to select a healthy infant as a healthy calf. Human lymph should be taken from primary cases only, from perfectly healthy subjects, and from thorough characteristic vesicles. Babies selected for this purpose should not only be in good health themselves, but as far as can be ascertained, of healthy parents.

Lymph should be taken on the day week from the vaccination, when the vesicle is perfectly formed, but before the stage of areola has set in. Any vesicle which at that date manifests areola must be discarded. This was Jenner's golden rule, and one which ought to be scrupulously observed. Good vaccine lymph is perfectly limpid, and has a certain degree of viscidity. A thin serous, too readily flowing lymph should not be used.

METHOD OF COLLECTING LYMPH.

Arm to Arm Vaccination.

The collection of lymph from the human subject for vaccinating is effected by opening the vesicle by numerous minute punctures on its surface, the utmost care being taken not to draw blood. Should any by accident be drawn, the vesicle must be discarded altogether. No lymph must be used which does not exsude spontaneously; there must be no pressure or squeezing of the vesicle. The lymph which stands on the surface of the opened vesicle is taken on the point of a lancet or other instrument employed, and is inserted into the arm of the child to be vaccinated, in various ways, as by puncture, by scarefying, by scratching, or abrasions, or by tattooing.

Vaccination should in all cases in which it is practicable be done direct from arm to arm, and insertions should be made in at least four, and preferably five, separate surfaces.

Re-vaccination should be done with every precaution against failure, and therefore always, if possible, in cases of this kind direct from the arm.

Re-vaccination at puberty is of great importance, but need not, except under circumstances of immediate exposure to small-pox, be recommended earlier.

Re-vaccination should be performed in all cases where the cicatrices want the true vaccine character. When small-pox is of epidemic intensity even the best vaccinated adults incur appreciable danger of attack; but with them, if it do occur, is in the majority of cases mild and rarely fatal. Amongst re-vaccinated adults attacks of small-pox are still more rare, and death is almost unknown.

Whilst small-pox in the unvaccinated patients runs an unmodified course in all but 2.6 per cent, its course in vaccinated patients is modified in 7[illegible] per cent; and while the death-rate of natural small-pox is from 35.55 to [illegible] per cent, that of vaccinal small-pox is but 6.56 per cent.

FREE VACCINATION.

(a) The Sanitary Inspectors of the Board of Health of the State of Louisiana are required by the rules of the Board to keep regular hours at the District Sanitary Office, and *free* vaccination should be performed daily at specific hours.

(b) The offer of vaccination to all inhabitants in each district, and the visitation in person by the Sanitary Inspector of all residences in the neighborhood of small-pox cases, and the earnest advocacy of vaccination and re-vaccination.

(c) Enforce the ordinance with reference to the thorough vaccination of the pupils of the public schools. The Sanitary inspectors are directed

ake repeated inspections of the public schools in their districts, and enever pupils are found without satisfactory marks of vaccination, they ould be excluded until proofs of successful vaccination are furnished· ee vaccination should be offered to all children. By such measures all-pox may be banished from the public school of New Orleans.

VESTIGATION AS TO THE RESULTS ACCOMPLISHED BY VACCINATION IN THE CITY OF NEW ORLEANS DURING THE FIRST TWENTY-THREE WEEKS OF THE YEAR 1883.

n the absence of exact data by which to determine the actual number vaccinated and unvaccinated inhabitants and the cases of small-pox occring amongst these two great classes, an inquiry was conducted, encing the following subjects:

. The mortality from all causes, and from small-pox, classified accordto race, in the city of New Orleans, during the first twenty-three eks of 1883.

. The cases of small-pox, classified according to race.

. The cases and deaths of small-pox occurring in the asylums, retreats, vents and prisons of New Orleans.

. The cases and deaths of small-pox occurring amongst the children, ite and colored, of the public schools.

RTALITY OF NEW ORLEANS DURING THE FIRST TWENTY-THREE WEEKS OF 1883.

he total mortality of New Orleans during the first twenty-three weeks 1883, has been : whites, 2,007 ; colored, 1,523 ; total, 3,530.

t will be observed that, although the whites are three times as numerous he colored, the number of deaths amongst the latter is only about one-rth less.

he highest death rate amongst the whites was reached during the week ing January 26th, namely 37.26 per thousand inhabitants per annum, the lowest in the week ending May 5th, namely 20.26 per thousand ; th rate, whites, for the twenty-three weeks, 27.73 per thousand.

he highest death rate amongst the colored population occurred during week ending April 7th, and reached the high rate of 81.54 per thousand abitants per annum. The lowest death rate amongst the colored ulation occurred in the week ending January 13th, namely 33.82 per usand ; total death rate per thousand colored inhabitants for the first nty-three weeks of 1883, 57.43 per thousand inhabitants.

eath rate during twenty-three weeks of 1883 for white and colored, 0.

he increase in the death rate amongst the colored population is clearly to the prevalence of small-pox.

n the following table will be found a detailed statement of the deaths, th rate by color for each week, and total average from January 1st to e 9th, 1883.

DEATHS, AND DEATH RATE BY COLOR FOR EACH WEEK, AND TOTAL AVERAGE FROM JANUARY 1 TO JUNE 9, 1883,

Week Ending—	No. of Deaths.			Death Rate per 1000 per annum.		
	White.	Colored.	Total.	White.	Colored.	Total.
January 6, [six days]	95	39	134	37.26	41.27	38.25
" 13	81	39	120	25.74	33.82	27.91
" 20	101	57	158	32 10	49.44	36.75
" 27	63	53	116	20 02	45.97	26.98
February 3	102	69	171	32.42	59.85	39.77
" 10	93	57	150	29.56	49.44	34.89
" 17	96	51	147	30.51	44.24	34.19
" 24	77	67	144	24.47	58.12	33.49
March 3	71	53	124	22.57	45.97	28.84
" 10	71	74	145	22.57	64.18	33.72
" 17	80	92	172	25 42	78.80	42.56
" 24	104	75	179	33 05	65 05	41.63
" 31	95	93	188	30.19	80.67	43.73
April 7	102	94	196	32.42	81 54	45.59
" 14	89	86	175	28 28	74 59	41.05
" 21	81	72	153	25.74	62.45	35.58
" 28	85	70	155	27.01	60.72	36.05
May 5	65	54	119	20.66	46.84	27.68
" 12	79	65	144	25.11	56.38	33.49
" 19	100	67	167	31.78	58.12	38 84
" 26	103	60	163	32.73	52.04	37 91
June 2	84	71	155	26.69	61.58	36.05
" 9	90	65	155	28.60	56.38	36.05
	2.007	1 523	3,530	27.73	57.43	35.70

CASES OF DEATHS OF SMALL-POX IN NEW ORLEANS FIRST TWENTY-THREE WEEKS OF 1883.

The increased death-rate both amongst whites and colored has been due to the presence of small-pox.

Thus of the 2007 deaths amongst the whites, 344, or about one-sixth were caused by small-pox; and of the 1523 deaths occurring amongst the colored populations, 580, or more than one-third, were caused by small-pox.

If the total deaths caused by small-pox, numbering 924, be subtracted from the deaths from all causes, there will remain but 2606, as the mortality of New Orleans from all causes incident to the soil and climate.

The total number of cases of small-pox reported up to twelfth of June 1883, 2648: whites, 1169; colored, 1479; distributed as follows: First District, 572; Second, 637; Third, 791; Fourth, 232; Fifth, 154; Sixth 134; Seventh, 28.

Full and minute details will be found in the following tables:

EATHS BY SMALL-POX BY WEEKS, JANUARY FIRST TO JUNE NINTH, 1883.

Week ending (six days):	White.	Colored.	Total.
anuary 6	6	5	11
" 13	3	10	13
" 20	7	18	25
" 27	4	9	13
ebruary 3	12	21	33
" 10	13	18	31
" 17	10	11	21
" 24	10	30	40
arch 3	10	17	27
" 10	7	17	24
" 17	17	39	56
" 24	25	40	65
" 31	20	49	69
pril 7	32	54	86
" 14	32	45	77
" 21	18	28	46
" 28	17	28	45
ay 5	14	20	34
" 12	13	17	30
" 19	28	24	52
" 26	21	20	41
une 2	13	27	40
" 9	12	33	45
Total	344	580	924

CASES OF SMALL-POX

Reported to the Board of Health from January 1st to June 12th, 1883, inclusive.

Month	1 Dist.			2 Dist.			3 Dist.			4 Dist.			5 Dist.			6 Dist.			7 Dist.			Total		
	w	c	Total	w	c	Total	w	c	Total	w	c	Total	w	c	Total	w	c	Total	w	c	Total	w	c	Total
nuary	37	56	93	18	30	48	23	18	41	17	23	40	2	..	2	5	3	8	1	5	6	103	135	238
bruary	34	50	84	37	42	79	38	51	89	14	18	32	2	2	4	7	5	12	1	9	10	133	177	310
rch	52	65	117	75	104	179	97	110	207	40	18	58	5	9	14	27	10	37	...	7	7	296	323	619
ril	63	74	137	84	110	194	117	180	297	32	18	50	9	25	34	34	21	55	1	2	3	340	430	770
y	41	62	103	41	61	102	105	97	202	25	13	38	16	54	70	11	4	15	..	1	1	239	292	531
ne 1 to 12	4	34	38	8	27	35	23	32	55	11	3	14	8	22	30	4	3	7	..	1	1	58	122	180
Total	231	341	572	263	374	637	403	488	791	139	93	232	42	112	154	88	46	134	3	25	28	1169	1479	2648

In order to place the Honorable Board of Health in possession of all e essential facts with reference to the presence of small-pox in New Or- ans, I have consolidated the results of recent inspections of the asylums, isons and charitable institutions of New Orleans.

This extended and careful inspection records the important fact, that all the eat benevolent institutions of New Orleans have been free from small-pox.

An extended inspection of the entire city, and an examination of the calities in which small-pox prevails has shown.

1. That small-pox has prevailed, in the more crowded and filthy portions the city, and amongst the poorer classes both white and colored.

2. The prevalence of the disease is due to two causes: namely its con- ant introduction from without; and to the neglect of vaccination.

GENERAL RESULTS OF THE INSPECTION OF TWENTY-ONE ASYLUMS, HOUSES OF REFUGE, EDUCATIONAL INSTITUTIONS, CONVENTS, AND THE PARISH PRISON, IN THE CITY OF NEW ORLEANS, LOUISIANA, DURING A PERIOD OF FOURTEEN DAYS, MAY 31ST TO JUNE 14TH, 1883, BY JOSEPH JONES, M. D., PRESIDENT OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA, ESTABLISHING THE HEALTHY CONDITION OF THE INMATES AND THE TOTAL ABSENCE OF SMALL-POX ON ACCOUNT OF THOROUGH AND SUCCESSFUL VACCINATION BY EXPERIENCED PHYSICIANS.

1.—*St. Elizabeth Asylum,*

Napoleon Avenue, corner of Prytania street. In charge of Sister Superio Madeleine. Physician, Dr. E. T. Shepard. Fourteen (14) Sisters; on hundred and fifty-two (152) girls between the ages of 12 and 18 years three (3) employees. Total population at time of inspection, 168. A well, not a case of sickness. No case of fevers, nor of any infections c contagious disease, during 1883. Hygienic and sanitary condition exce lent. The recent addition to the buildings has added much to the comfo of the inmates, and increased the efficiency and enlarged the field of us fulness of this noble institution.

3—*House of Good Shepherd,*

corner Bienville and Broad streets, in charge of Mother Superior St. Ro Physicians: Drs. G. K. Pratt and William Martin. The population at t time of the inspection consisted of 33 Sisters and about 300 female inmat Dr. C. Faget, Sanitary Inspector of the Second District, has vaccinat the inmates. No case of small-pox has occurred in this convent duri the years 1882 and 1883; the inmates have also been exempt from scar fever and measles. One death amongst the female inmates and two deat amongst the Sisters have been caused by phthisis pulmonalis. With t exception of two cases of the preceding disease, the population was exem from disease. Owing to its situation in the neighborhood of the navi tion and drainage canals, cases of chills and fevers sometimes occur.

3—*Asylum for Destitute Orphan Boys,*

St. Charles, between Valmont and Dufossat streets, in charge of Super tendent George Burns. Physician, Dr. J. B. Henderson. At time of spection, 148 boys. No case of small-pox during 1882 and 1883; no de 6 cases of scarlet fever, all recovered; at present 3 cases of mumps good sanitary condition.

4—*German Protestant Asylum,*

State, between Camp and Chestnut streets. Superintendent, Mr. Gust Pixburg. Physician, Dr. Joseph Schmittle. 54 boys and 54 girls; t 108. Children have been vaccinated by attending physician; no cas small-pox nor of measles, scarlet fever, or any contagious or infectious ease in 1883; 1 death in 1882 from consumption, and no death from cause in 1883; in good sanitary condition.

5—*Louisiana Retreat for the Insane,*

Henry Clay Avenue, Sixth District, in charge of Sister Superior Mary Jane Stokes. Physician, Dr. E. T. Shepard. Eighteen Sisters, 17 employes, nurses, etc.; 85 female patients; 31 male patients. Total patients at time of inspection, 116.

No case of small-pox among the inmates during 1882 and 1883. One of the employes was attacked by this disease in April, 1883, but was immediately removed from the premises, and the necessary measures instituted for his isolation. No other case occurred. Dr. William Ryan, Sanitary Inspector of the Sixth and Seventh Districts, was charged by the Board of Health with the isolation and disinfection of this case

6—*Poydras Female Orphan Asylum,*

Corner Magazine street and Peters Avenue. Matron, Mrs. Sutherland. Physician, Dr. G. N. Monette. Inmates, 89; employes, 9. One death in 1883, an infant brought in in a dying condition. One case of small-pox in 1883, girl, aged 14; case isolated; recovered. All inmates vaccinated; no other case occurred. Dr. William Ryan, Sanitary Inspector of Sixth and Seventh Districts, was directed by the President of the Board of Health to hold this case under careful observation and to institute the necessary measures of isolation and disinfection.

7—*Seventh Street Protestant Orphan Home.*

Matron, Mrs. A. Walker. Physician, Dr. E. A. Murphy. Boys in nursery, 17; large boys, 24; total boys, 41. Girls in nursery, 15; large girls, 43; total girls, 58. Total boys and girls, 99; attendants, 3. All well at date of inspection. No case of small-pox during 1883; one case in 1882. No measles nor diphtheria during 1883, and no deaths. All the children have been vaccinated.

8—*St. Vincent's Infant Asylum,*

No. 74 Magazine street. Physician, Dr. W. E. Brickell. At time of inspection 10 Sisters, 5 employes, and 200 children; 20 children at the Retreat, near Carrollton. No case of small-pox during 1882 and 1883. Measles have been recently introduced into the institution by children brought from Greenville, Miss.; 12 of the children are now suffering with the disease, which will probably extend to all susceptible to this affection. In May, a Mrs. ———, from Greenville, Miss., applied to be admitted with her four children. The Sister Superior observing that two of the children were suffering with high fever and some eruptive disease, refused admission, and the children were sent to the Charity Hospital.

The mother subsequently returned about May 27, with an order from the Mayor to admit the mother and the two remaining children. After admission the measles developed, and is now spreading from these Mississippi cases to the other children.

9—*Parish Prison.*

At time of inspection 135 prisoners. During the months of January, February, March, April, May, there have been confined in the Parish Prison about 775 prisoners. Of this large number, only one prisoner, Victor Eloi, (convicted of wife murder), has been attacked by small-pox. In accordance with the instructions of the President of the Board of Health, Dr. C. Faget, Sanitary Inspector of the Second District, vaccinated all

the prisoners, and the murderer, Victor Eloi, was transferred to the Small-Pox Hospital on March, 26, where he remained until April 9. No cases of measles or scarlet fever or diphtheria have occurred in the Parish Prison during 1883. One death from chronic dysentery occurred on January 15. At the date of the inspection. (June 30, no case of sickness in Parish Parish.

10—*Boys' House of Refurge,*

United States Marine Hospital Building, Common street. Thomas Brennan, Superintendent; ninty-seven boys, all well (June 3). No case of small-pox during 1883. The case of Jules A. Bone, (aged fifteen, committed for vagrancy), supposed to have been small-pox and sent by the Coroner to Small-Pox Hospital, was pronounced by the physician in charge to have been one of measles; sent to Small-Pox Hospital April 4, and returned to Boys' House of Refuge, April 16; this boy is said to have had small-pox before entering the Boys' House of Refuge.

11—*Fink Asylum for Widows and Children,*

corner Amelia and Camp streets. Matron, Mrs. Z. Henderson; Physician, Dr. Joseph Schmittle; thirty-two inmates all well; one death; no cases of small-pox and no cases of measles or scarlet fever; death caused by diarrhœa, aged 63; one death in 1882 from same disease, aged 70 years.

This institution is well adapted for the health and comfort of the inmates.

12—*The Association of Jewish Widows and Orphans' Home.*

Jackson street. Chief Superintendent, J. Brendzel; Physician, Dr. Frederick Loeber; boys, seventy-two; girls, fifty-two; widows, two; besides officers and attendants, seventeen—total, 143. One death in 1882, from dentition. No case of small-pox in 1882 and 1883. No deaths in 1883, and no cases of diphtheria, measles or scarlet fever at time of inspection June 5; all well.

13—*Protestant Episcopal Children's Home,*

Jackson street, between Chippewa and St. Thomas streets. In charge of Sister Sarah. Physician, Dr. C. J. Bickham. Forty-eight girls, Sisters six; total, fifty-four. Only one death has occurred among the children of this excellent institution since its foundation; but two Sisters have died one from yellow fever in 1878. No deaths in 1882 nor in 1883. No case of small-pox, measles or scarlet fever in 1882 or 1883. All the inmates vaccinated. All well June 6, 1883.

14—*St. Joseph Boys' and Girls' Orphan Asylum.*

corner Laurel and Josephine streets. In charge of Mother Mary Jacobine Physician, Dr. Thos. Layton. Two hundred orphans, boys and girls. All well. One death in 1883 from phthisis pulmonalis. No case of small-pox measles or scarlet fever during 1882 and 1883. This institution is conducted by Sisters. The day school has 400 girls and 250 boys. No case of small-pox has occurred among 650 children.

15—*New Orleans Female Orphan Asylum.*

corner of Camp and Prytania streets. Sister Superior Eustolia; Physician, Dr. Wm. E. Brickell; 140 girls, 12 Sisters, 5 employes, total 157. All well. During the past six years only one death, in 1878, amongst the children; in 1881 one Sister died from dropsy. No case of small-pox measles, scarlet fever or diptheria during 1882 and 1883.

16—*Convent of the Sisters of the Holy Family,*

No. 17 Orleans street, Mother Madelaine; Physician, Br. J. C. Faget; 20 Sisters, 66 daily scholars and 14 resident scholars. All well. No case of small-pox, or of measles, scarlet fever or diphtheria during 1882 and 1883.

17—*Convent of the Sisters of the Holy Family,*

No. 140 Tonti street. Mother Theresa; 5 sisters, 68 children; no cases of small-pox during 1882 and 1883.

18—*Asylum Sisters Holy Family,*

St. Bernard, between Urquhart and Villeré streets. 3 sisters, and 18 aged persons; have had no cases of small-pox in 1882 and 1883.

19—*Convent of the Sacred Heart,*

No. 79 Dumaine street. Sister Superior Zeringue; physician, Dr. J. C. Faget; 31 sisters; 140 day scholars, 8 boarding scholars, total, 179; all vaccinated; all well. No case of small-pox or measles, scarlet fever or diphtheria in 1882 and 1883.

20—*Mount Carmel Convent,*

No. 200 Bayou Road. Mother Theresa; physician, Dr. Charles Turpin; 12 sisters; 10 scholars, boarders; 75 white day scholars; 30 colored day scholars; all well; no case of small-pox in 1882 and 1883.

21—*Mount Carmel Asylum,*

No. 53 Piety street. Sister Superior Justine; 10 sisters, 129 children: all well; no case of small-pox in 1882 and 1883.

22—*Mount Carmel Day School,*

Algiers, Fifth District. Sister Philomena; physician, Dr. J. H. Magruder; 3 sisters, 83 children in school; no case of small-pox in 1882 and 1883.

23—*Catholic St. Mary Boys' Asylum,*

Corner of Chartres and Mazant streets. Sister Superior Mary Desert; physician, Dr. E. Doumeing; 300 boys. There has been no small-pox in this institution during the past nine years, and there is not a case at present.

In 1874 there were 64 cases of small-pox, with four deaths. Dr. J. C. Faget was the physician at that time. No measles, scarlet fever or diphtheria in 1882; no scarlet fever or diphtheria in 1883. About May 20th, 1883, measles were introduced by a sick child brought to New Orleans from Natchez, Miss. Up to the date of the inspection, June 11, 1883, forty cases of measles have occurred, and I inspected about thirty cases of this disease in the infirmary, all apparently progressing favorably. No other case of disease.

24—*Asylum of the Little Sisters of the Poor,*

Corner of Johnson and Laharpe streets. Mother Superior, Joseph Theresa; physician, Dr. J. C. Faget; 230 inmates, 16 sisters. No case of fever,

small-pox, measles or diphtheria during 1882 and 1883. Deaths incident to old age and chronic diseases. This most useful and benevolent institution was in excellent sanitary condition, and presented the appearance of a comfortable, well ordered home for the aged and infirm.

25—*Asylum of the French Benevolent Association,*

St. Ann street, between Roman and Derbigny streets; 11 inmates and 1 nurse. No case of small-pox during 1882. One death from small-pox in 1883.

26—*St. Anna Protestant Asylum for Widows and Children,*

corner Prytania and St. Mary streets. Matron, Mrs. E. E. Kip; physician, Dr. Joseph Holt; widows, 70; children, 36; total, 106. No case of measles, scarlet fever or diphtheria or small-pox in 1882 or 1883. No deaths in 1883. Two deaths in 1882 from old age. The sanitary arrangements of this admirable institution were found, as well as the rules governing it, to be excellent.

RECAPITULATION:

Total inmates	4,039
Total sisters	234
Total employes	62
Grand total	4,335

During the preceding inspection, not a single case of small-pox existed in any one of the twenty-six institutions specified; and during the years 1882 and 1883, only two orphans, one prisoner and one employe were attacked by small-pox; total, four cases of small-pox, each of which recovered.

That is amongst 4,335 persons vaccinated, only one in 1,083 suffered with small-pox, and not one died.

On the other hand, the total number of cases of small-pox reported in the city of New Orleans, from January 1st to June 12th, 1883, was, whites 1269; colored, 1,497: total, 2,648; with deaths, whites, 344; colored, 580; total deaths by small-pox, 924.

According to the United States Census of 1880, New Orleans, has a total population of 216,090; whites, 158,307; colored, 57,617.

During the first twenty-three weeks of 1883, one in 81.6 of the entire population, one in 135.3 whites, and one in 39 of the colored population of New Orleans were attacked with small-pox.

Of the cases of small-pox, one in 2.87 died; of whites attacked by small-pox, one in 3.39 died; of colored attacked by small-pox, one in 2.55 died.

I regard the public schools as affording another important field for the estimation of the power of vaccination to protect during the prevalence of an epidemic of small-pox, which had confined its ravages to no portion of this country, and, consequently, requested the learned, accomplished and efficient superintendent of the public schools, to make a thorough investigation as to the number of school children vaccinated; the number of cases attacked by small-pox, and the number of deaths occasioned.

The following is the reply of Hon. Wm. O. Rogers, Superintendent Public Schools, New Orleans, Louisiana:

OFFICE OF SUPERINTENDENT OF PUBLIC SCHOOLS,
New Orleans, June 15, 1883.

Dr. Joseph Jones, President Board of Health:

Dear Sir—Some time since I addressed a circular note to the principals of the public schools of this city, asking for information upon the following points:

1. How many pupils belonging to the schools, respectively, have had small-pox during the current session, beginning October 1, 1882?

2. How many pupils belonging to the school are reported to have died from small-pox during the present session?

Answers have been received from all the schools, except from two or three small schools in remote districts.

I send, herewith, the results of the inquiry, and add thereto the number of pupils enrolled in the reporting schools May 31, 1883.

Very respectfully,

M. O. ROGERS,
Chief Superintendent Public School, New Orleans.

HIGH SCHOOLS.

Names of Schools.	Location of Schools.	Number of Pupils Enrolled	Number of Cases of Small-pox	Number of Deaths Reported
irls' High School	Clio street, between St. Charles and Prytania	180	2	0
oys' High School	39 Burgundy street	80	0	0
Total		260	2	0

FIRST MUNICIPAL DISTRICT.

White Children.

Names of Schools.	Location of Schools.	Number of Pupils Enrolled	Number of Cases of Small-pox	Number of Deaths Reported
ckson, Boys	Magazine street	320	1	0
ckson, Girls	Magazine street	397	2	0
aulding	Constance and Gaiennie streets	382	0	0
ranklin	St. Charles street, near Girod	734	3	0
efferson	Dryades and Erato streets	434	4	0
ebster	Dryades and Erato streets	535	3	1
cDonogh No. 13, Boys.	Girod and Rampart streets	644	4	0
cDonogh No. 1, Girls.	Prieur and Palmyra streets	732	8	3
Total white children.		4,178	25	4

Colored Children.

isk, Boys	Franklin and Perdido streets	383	13	3
isk, Girls	Franklin and Perdido streets	598	11	1
Total colored children.		981	24	4

SECOND MUNICIPAL DISTRICT,

White Children.

Names of Schools.	Location of Schools.	Number of pupils Enrolled.	Number of cases of Small-pox	Number of Deaths Reported.
enville, Boys	Bienville and Robertson	422	0	0
bertson, Girls	Bienville and Robertson	246	4	1
. Philip, Boys	St. Philip, near Royal	768	3	0
. Anne, Girls	St. Ann, near Marais	356	4	1
cDonogh No. 15, Girls.	Barracks and Dauphine	428	2	0
Total White Children		2220	13	2

Colored Children

Bayou Road, Boys	Bayou Road and Derbigny	306	14	3
Claiborne, Girls	Claiborne and St. Peter	387	20	4
Total colored children		693	34	7

THIRD MUNICIPAL DISTRICT,

White Children.

Names of Schools.	Location of Schools.	Number of Pupils Enrolled.	Number of Cases of Small-pox	Number of Deaths Reported.
McDonogh No. 16, Boys and Girls	Bagatelle street, near St. Claude	816	7	0
McDonogh No. 9, Boys and Girls	Tonti and Onzaga streets	434	9	1
McDonogh No. 3, Boys	Spain, near Rampart street	613	6	0
McDonogh No. 2, Girls	Mandeville, near Rampart street	672	8	1
McDonogh No. 12, Boys	McCarthy Square	758	1	0
Washington, Girls	Chartres and Piety streets	404	0	0
Hancock, Boys and Girls	Near U. S. Barracks	201	3	0
Total White Children		3898	34	2

Colored Children.

Marigny, Boys and Girls	Marigny and Urquhart streets	432	15	6
McCarthy, Boys & Girls	Pauline and Chartres streets	214	2	0
Total Colored Children		636	17	6

FOURTH MUNICIPAL DISTRICT.

White Children.

Names of Schools.	Location of Schools.	Number of Pupils Enrolled	Number of Cases of Small-pox	Number of Deaths Reported
Laurel, Boys	Laurel and Philip streets	417	2	0
McDonogh No. 1, Girls	Laurel street, near Philip.	417	0	0
McDonogh No. 8, Boys	Constance and Ninth streets	441	2	0
Live Oak, Girls	Constance and Ninth streets	433	0	0
Magnolia, Girls	Carondelet street, near Jackson.	336	4	1
Chestnut, Boys and Girls	Chestnut street, near Jackson	216	0	0
Keller, Boys and Girls	Jackson and Freret streets	387	10	3
McDonogh No. 10. Boys.	Baronne and First streets.	340	1	0
Total white children		2,987	19	4

Colored Children.

Fulton, Boys and Girls	Fulton and Josephine streets	283	8	0
Dryades, Girls	Third street, near Baronne	295	6	0
St. Andrew, Boys	St. Andrew and Magnolia	198	7	1
Total colored children		776	21	1

FIFTH MUNICIPAL DISTRICT, ALGIERS.

White Children.

Names of Schools.	Location of Schools.	Number of Pupils Enrolled	Number of Cases of Small-pox	Number of Deaths Reported
McDonogh No. 4, Boys and Girls	Algiers	578	8	2

Colored Children.

McDonogh No. 5, Boys and Girls	Algiers	418	11	1

SIXTH MUNICIPAL DISTRICT.

White Children.

Names of Schools.	Location of Schools.	Number of Pupils Enrolled	Number of Cases of Small-pox	Number of Deaths Reported
McDonogh No. 7, Boys..	Milan and Chestnut streets	330	1	0
McDonogh No. 7, Girls..	Milan and Chestnut streets	343	0	0
Lincoln, Boys and Girls.	Carondelet and Dufossat streets.	102	0	0
Peontine, Boys and Girls	Live Oak and Valmont streets	317	2	0
Total White Children		1,092	3	0

Colored Children.

McDongh No. 6, Boys and Girls	Magazine st. and Napoleon av.	414	5	0

SEVENTH MUNICIPAL DISTRICT, CARROLLTON.

White Children.

Names of Schools.	Location of Schools.	Number of Pupils Enrolled.	Number of Cases of Small-pox	Number of Deaths Reported.
Jefferson No. 2, Boys..	Jefferson street, Carrrollton	191	No Report	No Report
Washington No. 2, Girls	Washington street, Carrollton	153	0	0
Total White Children		344	0	0

Colored Children.

Short street	Carrollton	396	2	2

RECAPITULATION.

White Children.

Districts	Number of Schools.		Number Pupils Enrolled		Number Cases Small-Pox		Number Deaths Reported	
	White	Colored	White	Colored	White	Colored	White	Colored
High Schools	2	....	260	....	2	....	....	..
First District	8	2	4,178	981	25	24	4	4
Second District	5	2	2,220	693	13	34	2	7
Third District	7	2	3,898	636	34	17	2	6
Fourth District	8	3	2,987	776	19	21	4	1
Fifth District	1	1	578	418	8	11	2	1
Sixth District	4	1	1,092	414	3	5	0	0
Seventh District	2	1	344	396	0	2	0	2
Total	37	12	13,557	4,314	104	114	14	21

The Board of Health has endeavored strictly to enforce the health ordinance passed May 18th, 1870, to the effect:

"Section 29. No child shall be admitted as a pupil in any public school without a certificate from a practising physician, or proof of successful vaccination. The Board of Health will at all times provide the means for gratuitous vaccination at the office of either of the sanitary inspectors."

Whatever protection the children of the public schools of New Orleans have enjoyed from small-pox, beyond other inhabitants of the city, is entirely due to the efforts of the Board of Health to enforce the preceding ordinance.

Thus, according to the statistics furnished by the superintendent of the public schools, of 13,557 white scholars, only 104 were attacked by small-pox; one case of small-pox occurred in 130.3 white scholars. Fourteen of the one hundred and four cases of small-pox terminated fatally, or one death in 7.42 cases; and one death from small-pox in 968.3 white scholars.

Of the entire white population of New Orleans, one in 135.3 were attacked by small-pox, a proportion not far different from that amongst the white scholars of the public schools, but the mortality was far greater, the deaths being in the ratio of one in 3.39 cases; and one in 460 of the entire white population died from small-pox during the first twenty-three weeks of 1883. Relatively the small-pox has been twice as fatal amongst the general white population of the city, than amongst the white pupils in the public schools. This result must be attributed to the protective effects of vaccination.

Of 4,314 colored children attending the public schools of New Orleans, 114, or one in 37.8 were attacked by small-pox, of which number 21, or one in 205.4 scholars, and one in 5.42 cases proved fatal.

Of the entire colored population of New Orleans, during the first twenty-three weeks of 1883, one in 39 were attacked by small-pox, and the mortality was one death in 2.55 cases; of the entire colored population of New Orleans during the same period, the proportion of deaths was one death to 99.7 colored population.

The disease was more than twice as fatal amongst the general colored population.

It is well known that the assemblage of large bodies of children, or of human beings of all ages, in rooms, as in schools and churches, is the most favorable of all conditions for the rapid propagation of contagious and infectious diseases; in addition to this, the assemblage of the children is daily, and they travel each day through considerable portions of the city.

The conclusion is justified by the preceding facts, not only that vaccination has to a great extent protected the children of the public schools from the ravages and fatal effects of small-pox, but also that but for the protective influence of vaccination. every one of the 13,557 white children and 4,314 colored children, total, 17,871, children in the public schools of New Orleans would have been attacked by genuine, unmitigated small-pox, and the mortality would have been not less than one in three, or about 5,953.

GENERAL CONCLUSIONS.

RESULTS ACCOMPLISHED BY VACCINATION IN THE CITY OF NEW ORLEANS DURING THE FIRST TWENTY-THREE WEEKS OF 1883.

In the absence of exact data in which to determine the actual number of vaccinated and unvaccinated inhabitants, and the cases of small-pox occurring among those two great classes, an inquiry was conducted embracing the following subjects:

1. The mortality, from all causes and from small-pox, in the city of New Orleans during 1883, classified according to race.

Total mortality of New Orleans during the first twenty-three weeks of 1883: Whites 2007, colored 1523; total 3530. Deaths from small-pox, whites 344, or about one-sixth of the total deaths; colored, 580, or more than one-third of the total deaths; deaths from small-pox, colored and white, 924.

If the total deaths caused by small-pox, numbering 924, be subtracted from the deaths from all causes, there will remain but 2606 as the mortality of New Orleans from all causes incident to our soil and climate.

2. Cases of small-pox classified according to race.

The total number of cases of small-pox, reported up to 12th of June, 1883, were 2648; whites 1169, colored 1479.

3. Cases of deaths of small-pox occurring amongst the inmates of the asylums, retreats, convents and prisons of New Orleans.

An extended inspection of the entire city, and an examination of the localities in which small-pox prevails, has shown:

(a) That small-pox has prevailed in the more crowded and filthy portions of the city and amongst the poorer classes, both white and colored.

(b) The prevalence of this disease is due to two causes, namely, its continual introduc on from without and to the neglect of vaccination.

3. The cases and deaths of small-pox occurring in the asylums, retreats, and prisons New Orleans.

In an inspection of twenty-six asylums, houses of refuge, educational institutions, nvents and prisons of New Orleans, it was found that not a case of small-pox existed the time of examination, or during the years 1882 and 1883; only two orphans, one risoner and one employe were attacked by small-pox.

otal inmates	4,039
otal Sisters	234
otal employes	62
Grand total	4,335

That is amongst 4335 persons occupying these twenty-six institutions and who had een vaccinated only one in 1083-5, suffered with small-pox during the year 1882 and 83, and not one died.

On the contrary, during the first twenty-three weeks of 1883, 1 in 81.6 of the entire opulation; 1 in 135.3 whites and 1 in 39 of the colored population of New Orleans were tacked with small-pox. Of these cases of small-pox 1 in 2.87 died, of whites attacked y small-pox 1 in 3.39 died, of colored 1 in 2.55 died.

4. The cases and deaths by small-pox occurring amongst the children, white and olored, of the public schools.

During 1883, of 13.557 white scholars only 104 were attacked by small-pox, of which urteen (14) or 1 death in 7.42 cases, and one death from small-pox in 968.3 white holars.

On the contrary, during 1883, 1 in 460 of the entire white population died of small-ox. Small-pox has been twice as fatal amongst the white population of New Orleans s amongst the white pupils of the public schools.

Of 4314 colored children attending the public schools of New Orleans, 114, or 1 in 37.8 ere attacked by small-pox, of which number 21 or 1 in 205.4 scholars, and 1 in 5.42 ases proved fatal.

Of the entire colored population of New Orleans, during the same period, the propor-on of deaths was 1 death to 99.7 colored population.

The disease was more than twice as fatal amongst the general colored population.

It is well known that the assemblage of large bodies of children, or of human beings f all ages, in rooms and in schools and churches, is the most favorable of all conditions r the rapid propagation of contagious and infectious diseases; in addition to this the ssemblage of the children is daily; and they travel each day through considerable por-on of the city.

The conclusion is justified by the preceding facts, that vaccination, as executed in ac-ordance with the orders and regulations of the Board of Health, has been productive of ood effects; and but for this measure every one of those 17.871 children in the public hools might have been attacked by small-pox and at least 5953 would have died.

SANITARY MEASURES FOR THE ARREST OF SMALL-POX.

No sanitary measures or combination of sanitary measures will avail for the arrest f small-pox in the absence of vaccination and re-vaccination; nevertheless, much good ay be accomplished by the following:

(d.) Enforce rigidly the sanitary laws of the State and city, with reference to the rompt report of each and every case of small-pox and varioloid to the President of the oard of Health.

Attention is especially directed to the following:

(Jewell's Digest, 1882—Revised City Ordinances).

XI.—HEALTH. (Art. 54, p. 236.)—All practitioners of medicine, masters of any water raft, hotel, boarding or lodging house keepers, principals or masters of any boarding hool or seminary, the chief officers or persons in charge of any public institution of harity or asylum, or otherwise, are hereby required to report within twenty-four hours, the office of the Board of Health, all cases within their cognizance of Asiatic cholera, ellow fever, typhus or ship fever, malignant scarlet fever, small-pox, varioloid, trichin-sis, or any other case that may at any time be specified by the Board of Health, and default or failure to so report such cases, such person so failing or in default shall be able to a fine not to exceed fifty dollars; provided, however, the said Board may declare unnecessary to report further cases, when any disease shall have been pro nounced idemic.

(e.) Isolation of cases of small-pox.

When anybody, especially a child or growing person, has sore throat, bad health or fever, he should be kept separate from all other persons, except necessary attendants, until it be ascertained whether he has scarlet fever, diphtheria or some other communicable disease.

When the Inspector observes neglect or refusal to use suitable precautions for the isolation of such cases, he should use his discretion in removing them to the pest-house.

(f.) The prevention of gatherings at funerals.

Particular attention is called to Section 2 of Ordinance 14, adopted April 14, 1870:

"Sec. 2. That the Board of Health shall have authority at its discretion to prevent access to, or egress from, or cause to be vacated any infected buildings, place or locality, whenever in the discretion of said Board such action should be deemed necessary to prevent the spread of small-pox."

(g.) The heads of families, as well as practitioners of medicine, should be held responsible for the prompt report of each and every case of small-pox.

Conduct of the Sick Room.

(h.) The bed-room of a person sick with scarlet fever, diphtheria, small-pox or any other infectious disease, should be cleared of all needless clothing, carpets, drapery, or any material liable to harbor the poison of the disease. The room should have a liberal supply of fresh air, at least 2000 cubic feet per head per hour. In summer the supply should be unlimited, windows and doors thrown open, and kept open night and day.

All discharges from throat, nose, bowels or kidneys should be received in vessels containing a pint or more of one or the other of the following solutions:

Carbolic Acid and Copperas Solution.

Dissolve 4 pounds of sulphate of iron (copperas) in two gallons of water and add one quart of Calvert's No. 5 carbolic acid. Store for daily use.

Solution Chloride of Zinc.

Sulphate of zinc (white vitriol)	4 ounces.
Common salt	2 ounces.
Water	1 gallon.

Solution of Chloride of Lead.

Dissolve two drachms of nitrate of lead in a quart of water; throw in a large vessel containing a gallon of water; dissolve two tablespoonfuls of common salt, mix the two solutions together and store for daily use.

Carbolic Acid Solution.

Carbolic Acid	4 ounces.
Water	1 gallon.

This solution will be useful for clothing, scrubbing floors and washing of hands.

Carbolate of lime and chloride of lime may also be sprinkled over the floor, when necessary.

When needed, the carbolic acid may be made to permeate the air by spray from air atomizer.

Solution of Chlorimated Soda.—Solution of Chlorimated Lime.

The clothing or bedding used about the patient should be thoroughly purified by the following measures; otherwise they should be destroyed by fire.

Heat is a valuable and effective agent for the purification of clothing.

The heat may be applied either by boiling water or in dry state, and should reach at least 212° F.

When dry heat is desirable, an oven will answer that purpose, carefully removing the embers, and hanging on wires the clothing to be disinfected.

Before using dry heat, the clothing should be thoroughly cleansed by washing.

Clothing may be cleansed by adding to every ten gallons of boiling water, three-quarters of a gallon of commercial solution of chloride of lime; or the clothing may be laid for twenty-four hours in a solution of sulphate of zinc, in the proportion of one to one hundred and twenty, or of chloride of zinc, in the proportion of one to two hundred and forty, or in the chloride of lead solution, previously described, and then be washed with soap and water if they cannot be baked.

Nurses and attendants should be required to keep themselves and their patients as clean as possible, disinfecting their hands frequently by chlorinated soda or other disinfectants.

Attendants should also wear cotton or linen (not woolen) clothes or overalls, to which particles will not so readily adhere, and which may be more easily disinfected.

Disposal of the Dead of Small-Pox.

Cremation would be the most effective and the most philosophical method of disposing of the bodies of those who die of small-pox.

All gatherings around the body should be prohibited. After death the corpse should be wrapped in sheets saturated with pure carbolic acid; the body thus treated should be inclosed in oil cloths and immediately placed in the coffin and covered with charcoal and chlorinated lime.

The vehicle conveying the body should be unattended with any funeral cortege.

The welfare of the living demands the utmost privacy and dispatch in the burial of the bodies of those who have died of small-pox.

Disinfection of Dwellings and Premises after Recovery or Death.

In addition to thorough cleansing of all wood-work, with soft-soap and water to which carbolic acid has been added (one pint of carbolic acid to four gallons of water), and removing and washing all fabrics, which can be removed, in the manner already described, the walls should be carefully brushed, and whenever practicable, white-washed.

In severe cases of small-pox, the clothing and bedding of the patient should be destroyed by fire.

The rooms should be fumigated for a period varying from twelve to forty-eight hours.

Fumigation. All doors and windows and the chimney being tightly closed, and all fabrics to be burned or washed taken away, sulphur is put into a metallic dish, a little saltpetre put upon the top or mixed with it, and then ignited.

The proportion should be two pounds of sulphur to one thousand cubic feet of space.

In large rooms two or more pans of sulphur may be used. Owing to the instant effects of the sulphurous acid upon the lungs, the person setting light to the saltpetre and sulphur must make a precipitate escape from the room the instant the sulphur is burning.

After the fumigation is completed, the doors and windows should be opened and kept open for several hours.

All articles, such as beds and bedding or wearing apparel, must not be burned in the open air, until thoroughly disinfected.

Bedding, beds, pillow-cases, which are not sufficiently infected to necessitate destruction, should be cut open and subjected to the fumes of burning sulphur.

DISINFECTION.

The Board of Health of the State of Louisiana deem it important that the people should be instructed with regard to the value and importance of disinfection, for the removal of foul gases and emanations, and for the destruction of the poisons of infectious and contagious diseases.

To accomplish the greatest good for the preservation of the health of the people, disinfection should be practiced at regular intervals throughout the entire year; but more fully and frequently in the city of New Orleans during the months of May, June, July, August, September and October.

By disinfection and household sanitation, the people should seek to avert or prevent pestilence, and should not delay the practice of these important measures until disease is actually developed, by the neglect and violation of sanitary laws. Each citizen, therefore, by obeying rigidly sanitary laws becomes the guardian of the health of his household.

New Orleans is without sewers, and the privies necessarily contain at all times an immense amount of fœcal matter. Even under the most energetic system of removal of the contents of the privies, it is essential that disinfectants be used in this hot, moist climate, at regular intervals. It should be borne in mind, however, that disinfection cannot be substituted for want of cleanliness or of ventilation, but should be used for the prevention of those putrefactive processes, which result in the generation of compounds and agents deleterious to man.

In the selection of disinfectants reliable agents should be secured, which can be procured in a state of purity, and at so small a cost that they can be used in adequate quantities and at stated intervals.

DISINFECTANTS.

Disinfection of Privies and Water Closets.

For the disinfection of privies, cess-pools, water closets and vaults, use the following:

Sulphate of Iron (green vitriol, or copperas)	8 pounds.
Culvert's Carbolic Acid, No. 5	1 pint.
Water	4 gallons.

Dissolve the green vitriol in hot water, and when cool add the carbolic acid. Add one gallon of this mixture to the privy or water closet to be disinfected, and thereafter one quart every fifth day or oftener, if foul smell be evolved from the privy.

Lime should not be used in the disinfection of privies, as it decomposes the salts of ammonia.

This objection, however, does not apply to the sulphate of lime (plaster of Paris), which may be used with advantage in combination with carbolic acid and copperas.

The walls of privies and all unpainted wood-work should be white washed.

Foul Drains, Damp Foul Yards, Stables, Cow-Houses, Market and Slaughter-houses.

Fresh-slaked lime, chloride of lime, plaster of Paris, and sulphate of iron should be sprinkled over damp and foul places, drains and yards. For disinfection of such places a simple solution of sulphate of iron or copperas, in porportion of one and a half pounds to the gallon, may be used. The copperas solution may be prepared in large quantities for markets, stables and slaughterhouses, foul yards, drains and gutters, by hanging a basket containing about seventy pounds of copperas in a barrel of water.

DIPHTHERIA.

HISTORY OF DIPHTHERIA IN NEW ORLEANS.

Of the total number of deaths caused by diphtheria in New Orleans during 1882, 37 occurred amongst the whites and only 5 among the colored population; total, 42.

Diphtheria first appeared upon the records of the Charity Hospital of New Orleans in the year 1859, when 5 cases were reported; 1860, 10 cases, 1 death; 1864, 7 cases, 6 deaths; 1867, 2 cases; 1868, 1 case, 1 death; 1870, 6 cases, 2 deaths; 1871, 2 cases, 1 death; 1873, 1 case; 1874, 2 cases, 2 deaths; 1875, 1 case, 1 death; 1876, 1 case, 1 death; 1877, 1 case, 1 death; 1878, 1 case; 1880, 1 case. Total cases and deaths in Charity Hospital during thirty-four years (1842-1880)—Cases, 43; deaths, 14; per cent of deaths, 32.5.

Diphtheria first appeared in the list of diseases in the mortuary records of New Orleans in the year 1847. During a period of nineteen years, preceding and including the American civil war, the deaths from diphtheria in New Orleans were as follows: 1847, 1; 1858, 95; 1859, 253; 1860, 145; 1861, 78; 1863, 188; 1864, 337; 1865, 104. Total, nineteen years, 1201.

During the period following the American civil war, the deaths from diphtheria in New Orleans were as follows: 1866, 98; 1867, 31; 1868, 10; 1869, 19; 1870, 19; 1871, 14; 1872, 39; 1873, 46; 1874, 102; 1875, 69; 1876, 40; 1877, 33; 1878, 59; 1879, 58; 1880, 81. Total during fifteen years, 724; total, thirty-four years, 1925.

The deaths by races during the last six years were as follows: 1877, whites 24, colored 9; total 33; 1878, whites 55, colored 4; total 59, 1879, whites 48, colored 10; total 58; 1880, whites 75, colored 6; total 81; 1881, whites 77, colored 15; total 92; 1882, whites 37, colored 5; total 42; total during six years, 1877-1882, whites 316, colored 49; total 365.

Total deaths from diphtheria in New Orleans during a period of thirty-six year, 1843-1882, 2059.

It is evident from the statistics furnished by the years 1877, 1878, 1879, 1880, 1881 and 1882, that diphtheria has prevailed to a greater extent amongst the whites than amongst the colored race. During the same period scarlatina caused deaths—whites 262, colored 49; total 311.

Whilst it is true that the disease now known as diphtheria has been described under many names, without, however, an exact appreciation of its distinctive character by Hippocrates, Celsus, Sydenham and others from the dawn of medical history to the present day, nevertheless, it was not until 1826 that Bretonneau, of Tours, created the name, and first pointed out the true pathology of the disease in his work entitled "Recherches, etc., sur la Diphtherite."

Bretonneau, in his latest memoir, substituted the term *diphtheric* for *diphtherite*, having arrived at the conclusion that the disease was not of an inflammatory character. Whilst diphtheria was almost unknown in English medical literature till 1859, when the Sydenham Society published a volume of memoirs on the disease, translated by Dr. Simple, from the French, by Bretonneau and others, it is, nevertheless, established by the records of the Charity Hospital and by the mortuary records of New Orleans, that this disease was recognized as early as 1847 by the physicians of New Orleans, and that 95 deaths were attributed to it in 1858, and 253 deaths in 1859.

During a period of thirty-four years, 1847-1880, diphtheria caused 1925 deaths, whilst the mortality occasioned by the diseases specified during the same time was as follows: Small-pox, 5726; measles, 1589; scarlatina, 2066; yellow fever, 28,739; Asiatic cholera, 11,847; cholera morbus, 889; cholera infantum, 2408; tuberculosis, 208; phthisis pulmo-

alis, 24,071; tabes mesenterica, 4591; general dropsy, 2554; trismus nascentium, 5906; ydrophobia, 70; convulsions, 3202; infantile convulsions, 6016; delirium tremens and ntemperance, 1887; croup, 1410; laryngitis, 269; bronchitis, 2992; bronchitis, chronic, 78; pneumonia, 8410; teething, 3430; enteritis, 6915; dysentery, 7097; diarrhœa, 8289; epatitis, 1415; total deaths during this period, 242,426.

It is evident, from the preceding statement, that during a period of thirty-four years, he deaths from diphtheria were very nearly equal to those caused by scarlatina, and exeed those occasioned by measles and those by croup.

Out of a grand total of 242,426 deaths, diphtheria caused about the one-hundredth and wenty-sixth part of the whole.

Whilst epidemics of diphtheria have occurred in many countries far apart from one anther, and differing essentially in physical features and climate, it nevertheless appears to e well established, that in recent years the geographical distribution of this disease has een greatly extended by the increasing intercommunications of people.

Holding the view that diphtheria is contagious, and that poverty and its concomitants, nventilated, filthy lodgings, scanty clothing and imperfect alimentation, impart to individuals a reciptivity for its contagion, the sanitary inspectors and police of the Board f Health have been directed to institute measures of isolation and disinfection in this isease, as well as in scarlatina and small-pox.

Diphtheria is a specific, contagious, asthenic, general disease, which sometimes prevails s an epidemic, and is endemic in certain places. It is characterized by the exudation n various situations, particularly of the mucous surface of the soft palate, uvula, tonsils, harynx, larynx and trachea, of a peculiar cacoplastic lymph, which, together with pithelial cells, generally forms a thick, tough and stratified pellicle or false membrane, —a stroma made up of mucous and epithelial cells, arranged in layers of the cacoplastic xudation.

Diphtheria presents the severest symptoms, when the diphtheritic inflammation of the auces is accompanied by croupous inflammation of the larynx and trachea, for then he symptoms are complicated with hoarseness, loss of voice, great difficulty of breathing nd other symptoms of croup, asphyxia and sudden death.

Even when the disease apparently ends in recovery, it is often followed by paralysis. Diphtheric paralysis comes on from two to four weeks after the disease disappears.

Natural course.

Diphtheria has a tendency to run a specific course, as may be seen in cases of oderate severity. In cases termed *benignant* by authors, the disease runs its entire ourse in from eight to ten days. In this class of cases, complete and rapid recovery ften takes place, not only without medical treatment, but also in spite of the most obectionable measures having been adopted. In many benignant cases, the exudation is mited to the tonsils and pharynx, but sometimes it invades the larynx and trachea; evertheless, under both circumstances the false membrane begins to loosen spontaeously, and to be got rid of between the fifth and seventh day.

In cases of very malignant type—both in those which set in suddenly with intense ymptoms, and in those which begin insidiously—the disease may run its course from ealth to death in less than one day, or according to the greater or less severity of the oisoning, the fatal issue or the dawn of recovery may not occur for several days.

In many severe cases, the putrefaction of the false membrane causes a penetrating, ul breath; and if the nasal mucous membrane is involved, a discolored, fœtid fluid ows from the reddened and eroded nostrils. The swelling of the glands in the neck, ecome more marked; the glands are hard but have no tendency to suppurate. Even fter a few days, death may occur from general paralysis, while the intellect remains lear. In long cases there is prostration of strength, and some patients whose state had ot excited any anxiety, may die suddenly with the symptoms of general collapse.

Incubation.

There is a great diversity of opinion as to the maximum period of incubation; but the eneral opinion is that it does not exceed a few days.

There are facts and reasonings, however, which suggest the possibility of the diphtheitic poison remaining dormant in the system for weeks or months, till called into activity y favoring circumstances.

Contagious Nature of Diphtheria.

The disease is contagious. In recent years the geographical distribution of the disease eems to have become greatly extended, a circumstance which is probably attributable to he increasing intercommunication of people.

The contagium is contained in the false membrane and shreds of tissue detached from he fauces, and in the air breathed out by the patients.

Physicians are in great danger of being infected by the morbid products coughed out by the patients, during the performance of operations, or painting, cleansing and cauterizing the throat. The medical profession has lost a number of excellent physicians and observers who have fallen victims to diphtheria whilst discharging their duties by the bed-side.

The physician should as far as possible protect himself from contact of the false membrane and shreds of tissue that are coughed up, and warn the attendants on the patients of the danger of this contact.

The well established cases of infection of persons who have been in the same room with diphtheritic persons, without coming in the immediate vicinity, prove that the air exhaled by the patient which does not contain shreds or exudation or tissue is a vehicle for the contagion.

Rules Governing Families Afflicted with Diphtheria.

1. As diphtheria is contagious, the patient should be isolated in an upper well ventilated room; all persons who have nothing to do with the case of the sick should be excluded. The sick should, as far as possible, be separated from the well. Pure air should be furnished by free ventilation, care being taken not to expose the patient to cold. The room selected for the sick should not only be the highest, but should if practicable be exposed to the sun. The room chosen for the sick should have no connection with the drains by water closet or wash basin.

2. Whenever practicable all well children should be sent out of the house, immediately after the occurrence of a case of diphtheria, and should not be allowed to return, unless the case has either recovered or died, and after the thorough cleansing and fumigation of the sick room and of the house, and the disinfection and cleansing of the privies drains, gutters and yard.

3. Woolen clothes, carpets, upholstered furniture, curtains and all unnecessary bedding and bed clothes, should be removed from the sick room, and only such materials and clothing be used as can be readily washed.

4. All clothes, when removed from the person or bed of the patients, should be immediately placed in a disinfecting solution containing half a pound of sulphate of zinc and two ounces of carbolic acid dissolved in two gallons of water. After remaining in this solution for at least two hours, the clothing should be subjected to the action of boiling water.

5. Pieces of old soft linen or cotton cloth should be used about the patients instead of pocket-handkerchiefs and towels, and after serving their purpose should be burned.

Solutions of copperas and carbolic acid, or of nitrate of lead and chloride of zinc should always be placed in the vessels containing the discharges from the throat, nose, kidneys and bowels.

6. As diphtheria presents the most malignant symptoms and is prone to become epidemic, in the midst of filth, especially the filth of privies, cess-pools, foul sewers, earth sodden with buried excrement, unclean cow-stables, putrid garbage, foul hog pens and stagnant water, every measure of disinfection and cleaning should be instituted by the health authorities. During the prevalence of diphtheria in any house, the privies and water closets should be daily disinfected with a solution of copperas and carbolic acid.

7. After a death from diphtheria, the soiled clothing should be burned or subjected to the action of the sulphate of zinc solution and boiling water. The body should be cleansed with the zinc and carbolic acid solution, and wrapped in a sheet saturated with the same and placed as early as practicable in the coffin. The coffin should be tight and closed and the funeral must not be held in a church or other public place. The cause of death should be specified in the funeral notice; and no one should be allowed to ride in the same vehicle with the remains of the deceased person to the cemetery. In no case must the corpse be exposed at the funeral; children should not be allowed to attend funeral in which a death from diphtheria has occurred; and the fewer the number of adult present the better; and during the entire services the freest ventilation must be maintained.

8. After the death or recovery of the patient, the room should be thoroughly cleaned disinfected and fumigated.

The wood-work should be cleaned with the sulphate of zinc and carbolic acid solution the walls white-washed and the room fumigated by burning sulphur.

9. During the prevalence of diphtheria in any household, the children should not be permitted to attend school, church or public gatherings.

SCARLET FEVER.

Mortality occasioned by Scarlatina in New Orleans, Louisiana.

The records of deaths by scarlet fever in New Orleans, do not extend back beyond the year 1844; and the deaths from this disease in the years specified were as follows:—1844, 4; 1845, 121; 1847, 15; 1848, 119; 1849, 22; 1850, 21; 1851, 29; 1853, 126; 1856, 18; 1857, 79; 1860, 200; 1861, 198; 1863, 43; 1864, 200; 1865, 161; total for nineteen years, preceding the American Civil War and including this period, 1,575; 1866, 41; 1867,24; 1868, 15; 1869, 13; 1870, 44; 1871, 5; 1872, 5; 1873, 5; 1874, 4; 1875, 144; 1876, 123; 1877, 0; 1878, 1; 1879, 1; 1880, 56; 1881, 197; 1882, 48; total, seventeen years following the American Civil War, 736; grand total during thirty-six years, 2,317 deaths from scarlet fever.

The deaths from scarlet fever by races, during the last six years, were as follows: 1877, whites, 10; 1878, white, 1; 1879, white, 1; 1880, whites, 49, colored, 7; 1881, whites, 60, colored, 37; 1882, whites, 43, colored, 5; total, whites, 254, colored, 49; total, 303.

It is worthy of note that during the past six years, out of a total deaths of 303, from scarlet fever, 254 were white and 49 colored, the deaths amongst the whites being five times as numerous, although this class of the population is only about three times as numerous as the colored.

As some products of the sick, however conveyed to those hitherto unaffected, especially the young, always reproduce this infectious, specific fever, it would appear from the comparatively small number of deaths caused by scarlatina, during the past thirty-six years, that the topography and climate of New Orleans are not favorable to the propagation of the infecting material of scarlet fever.

Facts of Interest in the Natural History of Scarlet Fever for the Guidance of Sanitary Officers.

All the forms of scarlet fever, however varying in degrees of severity, are capable of conveying the most severe types. It is held by sanitarians that scarlet fever is conveyed from one person to another by means of the epithetion of the surface of the body, by the exhalations from the outer or inner surfaces of the various parts of the body and from the excretions also.

The contagious matter of scarlet fever is capable of retaining its power to carry the disease for many days, and even for months; and it may infect and be stored up in anything that may have come in contact with an infected person or object, as air, food, clothing, beds, bedding, curtains, carpets and furniture. The exhalations from the dead are dangerous, and there is evidence to show that funerals have occasionally spread the disease. Whenever an individual has died of scarlet fever, or any other contagious or infectious disease, the funeral notice should specify the cause of death.

The origin and nature of the scarlet fever poison is unknown; it is impossible to say that it may not now and again be produced anew in the laboratory of nature; but such renewed production, is not required, for the explanation of its propagation and existence at the present day; for it is unquestionably contained in everything that proceeds from the body of a patient laboring under the disease. The poison of scarlet fever is contained in special energy in the skin, which peels off at the close of the attack, and is scattered to the winds in the form of tiny scales, or even as absolute powder; Such portions of dried skin may settle down in undusted corners, or may become entangled in clothing or bedding, in either case preserving their virulence for an unknown period of time and always liable to be disturbed from their resting place and sent forth to reproduce the fever. The specific fever being established, the patient generates a poison which may be communicated directly, as shown by a few cases of successful inoculation, which may contaminate the atmosphere.

The disease is eminently communicable, so that no susceptible person can remain in the room, and hardly in the same house, without contracting it, unless special care be taken to isolate the sick. That scarlatina is capable of being directly communicated is shown by the fact that children have been inoculated with the serum found in the vesicles which sometimes accompany the rash, and have taken the disease; but the inoculated disease not having proved milder than the natural, the practice has been abandoned. Another proof of the directly communicable nature of scarlatina is that it has often been propagated by *fomites*, as by the clothes and boxes of boys returning from school. Susceptible persons also sleeping in a room lately occupied by patients laboring under scarlatina, and before the furniture has been washed and the bedding and walls well mutilated, have often taken that disease.

The virus is distructable by heat at the boiling point, or it may be disinfected artificially by the fumes of nitric acid, chlorine gas, and sulphurous acid gas. The details of disinfection have been given under the head of small-pox.

Scarlatina in general affects the same individual only once during his life, and in this respect obeys the general law of exanthematous fevers. Occasional exceptions have certainly been observed by practitioners, though, from the testimony of Dr. Willan, a second attack of scarlatina in the same individual is extremely rare; he states that he had never seen such a repetition among two thousand patients whom he had visited in scarlatina. It is by no means uncommon for those who have had the disease, to suffer from sore throat—*Scarlatina* faucium—when they are in attendance upon one laboring under scarlatina.

All ages are probably liable to the disease; but it is most common to childhood—the febleness of this early period of life facilitating, perhaps, the reception of the poison; the disease attacks most frequently between the second and fourth years of life; the chances of attack decline rapidly after the fifth year, and as children grow older, the less liable are they to be attacked.

The period after invasion of exposure to sources of contagion is exceedingly various. Some individuals are seized within a few hours; others do not exhibit any of the peculiar symptoms for several days; and in some more rare cases, five or six weeks have intervened between the period of exposure and the accession of the disease.

The period of latency or incubation of scarlet fever may, as a general rule, be estimated as lasting from eight to ten days.

The action of the specific poison induces a disorder of the blood, which in the first instance is made manifest by a *febrile state*, and a *disturbed condition of the great nervous centres;* the primary form having lasted for one, two or three days, does not entirely subside, and the further action of the poison is manifested by a peculiar scarlet efflorescence in the fauces and pharynx and on the neck and face, gradually spreading over the whole body, preceded, followed or accompanied by a sore throat, and also by intense hyperæmia and catarrh of the uriniferous tubucles. The eruption runs a course of from six to eight days and terminates in desquamation, but the duration of the affection of the throat is more indefinite, and varies from eight to twenty or more days.

The fever continues during the eruption, and as long as the sore throat exists; but this being terminated, it subsides and convalescence ought to advance. In many instances, however, other results succeed, as dropsy or inflammation of the joints, pleura, or pericardium, of the ear or cornea, and of the kidneys.

These lesions are quite as formidable as any which had preceded them, and each and all of them are localized expressions of the influence of the scarlet fever poison in the body.

The scarlet fever poison affects individuals very differently; of a number of persons exposed to the same source of infection, some may escape altogether; others have a mild form of the disease; in others there is fever and sore throat without a distinct eruption, desquamation, however, may take place; in others the more malignant form of the disease may appear, as passive hæmorrhages, albuminuria, uræmic poisoning and convulsions, extensive suppuration and abscesses.

From the preceding facts, we deduce the following practical rules for the guidance of sanitary officers in dealing with scarlet fever.

1. Whilst the period during which the human body retains the power of communicating, the specific poison of scarlet fever which is reproduced during the progress of the disease, varies in different cases; children who have suffered with this disease should not be allowed to attend gatherings of healthy children and adults, as at school or church, or social entertainments, for at least two weeks after the establishment of convalescence. When Bright's disease supervenes, or painful abscesses form, the period of seclusion will of course depend upon the nature and progress of the supervening affections.

2. Cases of scarlet fever should be isolated, as far as practicable, in every household, and only the necessary nurses and attendants be allowed in the sick room. When the structure of the residence will admit, the sick with scarlet fever should be placed in an upper well ventilated room upon the highest floor, and should be secluded from all, except those who have charge of the case.

3. Children of families in which scarlet fever is prevailing should be prevented from mingling with other children and should be kept from meetings and schools.

4. To *prevent the body of the patient from spreading contagion,* the patient's body should be anointed at least twice a day with oil, lard or cosmoline, containing about ten grains of carbolic acid or of thymol to the ounce. This process should be maintained until all bran-like scaling of the skin is at an end. After the establishment of convalescence the entire person should be thoroughly cleansed by means of warm baths and soap. Before the patient leaves the sick room, nurses and attendants upon scarlet fever cases, should not mingle with persons liable to take the fever, without thorough ablution of hands, head, and changing of all clothing.

5. Carpets, curtains, trunks, clothing and all stuffed furniture and bedding, should be removed from the room in which the sick or dead with scarlet fever are to be placed. Cleanliness and ventilation should be enforced night and day. Every cloth and cup and

clothing and bedding, used in the sick room, must be cleansed and disinfected before ng handled or used by other persons. The cloths and dishes used by the sick should put into boiling hot water, as soon as removed, without being taken to another room. soiled clothing from the sick and the bed, should be thrown into a disinfecting fluid, le by dissolving *four table-spoonfuls of sulphate of zinc*, and two table-spoonfuls of mon salt, in a gallon of boiling water.

oiled clothing from the sick should be thoroughly boiled before washing, and they uld be cleansed and prepared separate from the rest of the family washing.

o disinfect discharges from the sick, use a disinfecting solution composed of one nd of sulphate of zinc (white vitriol) and half a pound of common salt (chloride of um) in a gallon of water; or two pounds of copperas and four ounces of carbolic l (Calvert's No. 5) in a gallon of water. The copperas and carbolic acid solution may used for all excremental discharges, whilst the sulphate of zinc solution is best for articles of clothing and furniture.

he sulphate of iron will stain and injure clothing and bedding.

l vessels used in the sick room should be disinfected with one or the other of these nfecting fluids, unless immediately immersed in boiling water. All discharges and ed clothing should be disinfected immediately.

After convalescence or death, the rooms occupied by the patients should be vacated. e the rooms as tightly as possible; place sulphur in iron pots, set in wash buckets or pans containing a little water. Set the sulphur on fire by aid of hot coals or a nful of alcohol, and keep the rooms tightly closed twenty-four hours.

or a room ten feet square, containing one hundred square feet of floor-space, at least pounds of sulphur should be used; for large rooms, proportionally increased ntities.

trous acid gas may also be used with benefit. This may be prepared by pouring c acid upon copper filings.

like manner, chlorine may be employed as a disinfectant; the gas may be evolved a mixture of common salt, black oxide of manganese and sulphuric acid, or from ochloric (muriatic acid) and black oxide of manganese.

lphurous acid, nitrous acid or chlorine gas should not be used simultaneously, but be employed in succession.

ccessive fumigations with sulphurous acid, nitrous acid (or nitric oxide) and rine, together with the cleansing of the floors and wood work and walls with car- acid and zinc solutions, would be sufficient to destroy the contagious matter of l-pox, scarlet fever, diphtheria, measles and yellow fever, when efficiently and oughly performed.

After death, the corpse should be washed in the zinc and carbolic solution, and ped in a sheet saturated with the same, and placed at the earliest practicable ent in the coffin and sealed up.

hen a death from this disease is announced in print, the notice should state the e, as from "*scarlet fever*," in order to prevent attendance at the funeral, or visits to house.

As the liability to infect others continues as long as there is any desquamation, or ng of the skin, and possibly even longer, the recently sick should not attend school, ch or any public gathering, or ride in a public conveyance while the skin is peeling, throat and eyes sore, or any symptoms of dropsy are present.

all cases, a competent physician should decide and certify in writing, that the nt is safe to others, before any child recently suffering from scarlet fever is per- ed to attend school.

JOSEPH JONES, M. D.
156 Washington street, corner Camp, Fourth District.

W ORLEANS, Louisiana, August 16, 1883.


STATE LINE
WASHINGTON
FRANKLINTON
TANGIPAHOA
AMITE CITY
ST TAMMANY
COVINGTON
HANCOCK
HARRISON
JACKSON
MOBILE
ALABAMA STATE LINE
LAKE MAUREPAS
LAKE PONTCHARTRAIN
ST JOHN BAPTIST
ORLEANS
NEW ORLEANS
LAKE BORGNE
SHIELDSBORO
PASS CHRISTIAN
MISSISSIPPI CITY
BILOXI
OCEAN SPRINGS
EAST PASCAGOULA
PASCAGOULA BAY
MISSISSIPPI SOUND
MOBILE BAY
CHANDELEUR BAY
Route of Steamers between New Orleans and Mobile
Projected Route of the
NEW ORLEANS, MOBILE AND TEXAS RAIL ROAD
High Pine Ridge
SPRINGFIELD
PONTCHATOULA
MANDEVILLE
RIGOLETS
AMERICUS
GRANT PASS
OTTER BAR



THE CENSUS.

1870—1880.

The following table, partly official and partly estimated, shows the population of all the States and Territories except Alaska, New Mexico, Washington and Wyoming. The final returns will not vary materially from these figures:

STATES	1870.	1880.
Alabama	996,992	1,150,000
Arkansas	481,471	760,000
California	560,247	860,000
Colorado	39,864	195,161
Connecticut	537,454	622,166
Delaware	126,015	145,000
Florida	187,748	300,000
Georgia	1,184,109	1,450,000
Illinois	2,539,891	3,100,000
Indiana	1,680,637	2,056,500
Iowa	1,194,020	1,500,000
Kansas	364,399	1,000,000
Kentucky	1,321,011	1,734,331
Louisiana	726,915	940,000
Maine	626,915	642,000
Maryland	780,894	935,000
Massachusetts	1,457,251	1,783,812
Michigan	1,184,059	1,600,000
Minnesota	439,706	780,072
Missouri	1,721,295	2,300,000
Mississippi	827,922	1,044,000
Nebraska	122,015	452,542
Nevada	42,491	65,000
New Hampshire	318,300	347,311
New Jersey	906,096	1,100,000
New York	4,382,759	5,080,000
North Carolina	1,071,361	1,400,000
Ohio	2,665,260	3,200,000
Oregon	90,923	175,535
Pennsylvania	3,521,951	4,226,099
Rhode Island	217,353	276,710
South Carolina	705,606	653,410
Tennessee	1,258,520	1,570,000
Texas	808,579	1,600,000
Virginia	1,225,163	1,600,000
Vermont	330,551	334,455
West Virginia	442,014	708,060
Wisconsin	1,054,670	1,300,000
Totals	38,162,829	49,302,144
TERRITORIES.		
Arizona	21,807	41,600
Dakota	14,181	135,500
District of Columbia	131,700	174,050
Idaho	14,990	30,000
Montana	20,595	38,098
Utah	86,786	144,000
Totals	290,063	563,998

The aggregate population of the States and Territories comprised in the foregoing statement amounts to 40,865,142. The four Territories not included will bring up the total to about 50,000,000, making an increase of 11,700,000, or a trifle more than 30 per cent. since the census of 1870.

MAP

ILLUSTRATING THE TOPOGRAPHY OF

NEW ORLEANS

AND OF THE COAST OF

Louisiana and Mississippi,

PREPARED FOR

JOSEPH JONES, M. D.,

—BY—

T. S. HARDEE, Civil Engineer.

VACCINATION: VARIOLÆ VACCINÆ (COW POX): VARIOLA, AND VARIOLOID: ACCIDENTS ATTENDING VACCINATION: SPURIOUS VACCINATION.

CIRCULAR NO. 2—PREPARED FOR THE GUIDANCE OF THE QUARANTINE OFFICERS AND SANITARY INSPECTORS OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA,

—BY—

JOSEPH JONES, M. D., PRESIDENT OF THE BOARD OF HEALTH OF THE STATE OF LOUISIANA.

The question of the arrest and eradication of small-pox has been regarded and treated by the Executive Officer of the Board of Health of the State of Louisiana as of transcendent importance to the happiness and welfare of the people, and facts were recorded in Circular No. 1, issued the sixteenth of August, 1883, which revealed the difficulties of dealing with this question in the delta of the Mississippi, and more especially the city of New Orleans; and the measures of compulsory vaccination, isolation and disinfection which had been in past times urged upon the General Assembly and the municipal authorities were again strenuously advocated.

No city upon the globe is more exposed to the introduction and spread of small-pox than New Orleans; and at the same time the greatest difficulties are experienced in the introduction of efficient measures for the exclusion and arrest of this pestilence.

This proposition will be sustained by the following facts:

New Orleans has a larger colored population than any other city on the North-American Continent, the United States census of 1880 giving the population 216,090; whites, 158,307; colored, 57,617. A large proportion of the negro population not only neglect vaccination, but are opposed to this protective measure; New Orleans, therefore, has the largest population unprotected and liable to the ravages of small-pox.

New Orleans has the largest negro population immediately tributary to, of any civilized city in the world. In those States which are most nearly related to New Orleans by geographical position and commercial relations, the white population numbers 11,082,192, out of a total population of the United States of 50,155,783, being almost one-fifth; the colored population numbers 3,158,051 out of a colored population in the United States of 6,580,793, being almost one-half.

Whilst only one-fifth of the total population of the United States inhabits the States of Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Missouri, Tennessee and Texas, nearly one-half the entire negro

population of this great country is gathered within the bounds of these States which are most directly connected with New Orleans, by geographical position and commercial relations.

3. The surrounding States tributary to New Orleans have neither established efficient quarantines against small-pox, nor have their health authorities reported the introduction and existence of this disease, to the Board of Health of the State of Louisiana.

Small-pox has been prevailing in the Western cities and in the villages and plantations along the Mississippi river, and cases have during 1881, 1882 and 1883, been continuously introduced into New Orleans by the inhabitants of the plantations; the settlements of which form almost a continuous village for nearly one thousand miles along the banks of this mighty stream.

It is not surprising that ignorance of sanitary laws, and neglect of vaccination, combined with unrestricted intercourse, should have found in the colored race along the banks of the Mississippi the most favorable condition for the lodgment, propagation, spread and continuance of small-pox. A vast floating colored population continuously pours in and out of New Orleans; large numbers of colored seamen man the steamboats which conduct the internal commerce of this great valley, and they have during the years 1881, 1882 and 1883, been the medium of introducing a constant stream of small-pox poison into New Orleans.

4. As long as small-pox prevails amongst the white and colored population of the Mississippi Valley and of the States tributary to this commercial centre, just so long will this disease continue to find successive lodgment in New Orleans. The extent to which the population of New Orleans will suffer from each introduction of the small-pox poison will depend upon the number of citizens, unprotected by vaccination or by preceding attacks of small-pox.

5. The opposition to vaccination is not confined to the uneducated and comparatively helpless colored race, who by the results of the American Civil War of 1861-1865, have been precipitated into a state of freedom, demanding for its intelligent and successful enjoyment some knowledge of sanitary as well as of political science; bitter opponents to vaccination have been found amongst the white race, and in the ranks of the medical profession, and their efforts have up to the present moment defeated in the General Assembly of Louisiana, and in the Municipal Government of New Orleans, all efforts to eradicate small-pox, by the institution of laws rendering vaccination compulsory.

On the twenty-ninth of May, 1883, the following ordinance relative to vaccination was presented to the Common Council of New Orleans, read in full and referred to the Committee on Health; on the twenty-sixth of June 1883, read, and failed to pass; August 14, read and ordered to be laid over; August 28, read and ordered to be laid over one week; September 4, 1883 lost:

AN ORDINANCE BY THE CITY COUNCIL.

"SECTION 1. *That all children* of the city of New Orleans shall be vaccinated before same attain the age of two years, said vaccination shall be successful or repeated such a number of times as to make it evident that successful vaccination is impossible; and such children and all other persons as is hereinafter provided, shall be re-vaccinated as often as the Board of Health or other legally authorized officers shall require, provided that no person or child of full age shall be required to be successfully vaccinated more than once during any period of five years.

"SEC. 2. *Be it further ordained*, that any resident of the city of New Orleans over the age of fifteen years, who has not been successfully vaccinated after a lapse of five years, since successful vaccination, and who after twenty-four hours' notice to that effect given by officers legally authorized thereto, shall fail or refuse to be vaccinated, may be arrested and taken before the Recorder's Court, having jurisdiction, and on conviction, fined in a sum not exceeding *twenty-five dollars or imprisonment* not exceeding thirty days, the fines so imposed and collected to be turned over to the Board of Health, and any parent or guardian or person having control of a child under fifteen years of age, and who on notice as herein stated, shall fail to vaccinate shall be subject to the penalties herein provided.

"SEC. 3. *Be it further ordained*, that the Board of Health shall be and is hereby authorized to provide the means and facilities for vaccination which shall be free to all persons; and shall or may authorize the physician in attendance in any case on application to give a certificate of the time when successful vaccination shall have been performed on any person.

"Such certificate shall be evidence and proof of the fact therein stated, and a re-vaccination shall be necessary within a period of five years from the date of the vaccination stated therein."

This subject was again urged upon the attention of the Board of Health of the State of Louisiana, as will be shown by the following extracts from the proceedings of that date :

EXTRACT FROM THE PROCEEDINGS OF THE MEETING OF THE BOARD OF HEALTH, STATE OF LOUISIANA, SEPTEMBER 6, 1883.

The President, Dr. Joseph Jones, presented the following report :

HEALTH OF NEW ORLEANS.

Mortality of New Orleans, during the Months of July and August, 1883.

WEEK ENDING	Deaths.		Total Deaths.	Death Rate.		Total Death Rate.
	W.	C.		W.	C.	
July 7	75	41	116	23.83	35.56	26.98
July 14	79	38	117	25.11	32.96	27.21
July 21	82	58	140	26.06	50.31	32.56
July 28	95	45	140	30.19	39.03	32.56
August 4	83	55	138	26 38	47.71	32.09
August 11	77	48	125	24,47	41.63	29.07
August 18	74	46	120	23.52	39.90	27.91
August 25	73	43	116	23.20	37.30	26.96
September 1	63	48	111	20.02	41.64	28.82

Total deaths for the four weeks ending July 28, 513; total deaths for the four weeks ending September 25, 499; total deaths for the eight weeks July 1 to September 25, 1012; total deaths for the nine weeks July 1, September 1, 1124; average number of deaths for the months of July and August, 562.

An actual examination of the record shows that the total number of deaths in July were 572; and that the actual mortality of August was 531.

The mortality in New Orleans during the first eight months of 1883 has been as follows :

	Total Deaths.		Total Deaths.
January	607	May	666
February	607	June	654
March	734	July	572
April	713	August	531

Total deaths six months 3981.

Total deaths first eight months of 1883, 5084.

We observe therefore that the lowest monthly mortality has occurred during the months of July and August, the hottest and dryest months of 1883, and the lowest mortality has been attained during the month of August, when the deaths numbered only 531.

MORTALITY FROM SMALL-POX DURING THE FIRST EIGHT MONTHS OF 1883.

The progress of the small-pox of 1883, will be illustrated by the following table:

DEATHS FROM SMALL-POX IN THE CITY OF NEW ORLEANS, DURING THE FIRST EIGHT MONTHS OF 1883.

MONTHS.	Deaths from Small-pox.		Total Deaths from Small-pox.
	White.	Colored.	White & Colored
January	24	52	76
February	48	83	131
March	72	147	219
April	102	159	261
May	80	95	175
June	53	96	149
July	44	40	84
August	31	36	67

Total deaths from small-pox during the first six months of 1883, whites 379; colored 634. Total whites and colored 1013.

Average number of deaths from small-pox, during the first six months of 1883, 168.8.

Total deaths from small-pox during the months of July and August 1883 whites, 75; colored 76. Total 151. Average number of deaths during the months of July and August from small-pox 75.15.

Total deaths from small-pox during the first eight months of 1883 1164.

Average number of deaths per month during 1883, first eight months 145.5.

It is evident therefore that the small-pox has decreased one-half during the months of July and August.

But this foul disease is still in our city, and demands the most earnest and careful consideration at the hands of the Board of Health and the City Council.

A sufficient corps of physicians, not less than one to each ten thousand inhabitants, should be at once appointed and properly paid to execute a careful house-to-house inspection and vaccination.

Vaccination should be personally urged upon each inhabitant, by the experienced and trusted local practitioners of each division.

Twenty physicians at $50 per month, $1000.

Service of twenty physicians at $50 per month, for five months, October, November, December, January, February, $5000.

Vaccine matter $5 per month to each physician, twenty physicians, $100 per month. Total cost of vaccine matter $500.

The most experienced and popular physicians should be appointed in the districts in which they reside, and they should be required to make a careful census of the district, giving the following data:

Inhabitants: Whites, colored. Total whites and colored.

Number of inhabitants who have had small-pox: Whites, colored.

Total number of inhabitants who have been vaccinated previous to census: Whites, colored.

Total number of inhabitants unvaccinated: Whites, colored.

Number vaccinated (primary) by inspector: Whites, males, females. Total—Colored, males, females. Total—.

Re-vaccinations by inspector: Whites, males, females. Total—Colored, males, females. Total—.

Number of those who refuse vaccination: Whites, males, females. Total—Colored, males, females. Total—.

A careful list of all persons, with their exact residences and places of business, who refuse vaccination, should be kept.

This list should be classified after the completion of the canvass in each district, and the homes, residence and occupations of all those refusiug vaccination, should be published for the information and protection of the public.

In this manner employes, heads of factories and heads of families would be warned as to the existence of dangerous and unprotected elements in their midst.

Some laws should be enacted against all vessels or railroads bringing cases of small-pox into New Orleans.

The entire police of this city should be instructed to arrest all persons found with small-pox on them wandering in the streets, and immediately send them to the small-pox hospital.

If the proper funds were placed at the disposal of the Board of Health to execute the foregoing plan, much would be accomplished to eradicate this disease; the act of 1877 empowers the Board of Health to execute the necessary rules and regulations with reference to vaccination, provided that it be not made compulsory.

The preceding measures, proposed by the President, were discussed and warmly advocated by Col. I. N. Marks and Col. A. W. Bosworth, and Dr. Felix Formento introduced the following resolution, which was unanimously adopted:

Resolved, That a medical officer be appointed by this Board of Health for each ward of the city, whose duties shall be to visit personally every house in his ward, and to urge the necessity of immediate vaccination, and vaccination of any person liable to contract the disease living in it, and making distinct statements of the results of his investigation in accordance with the plan suggested by the President of the Board of Health.

Resolved, That the city authorities be requested to appropriate sufficient funds in order to defray the necessary expense, such as salary of physicians, supply of vaccine matter, etc.

In accordance with the preceding action of the Board of Health the following communication was addressed to His Honor Wm. J. Behan, Mayor of the city of New Orleans, on the tenth of September 1883.

OFFICE BOARD OF HEALTH, STATE OF LOUISIANA,
New Orleans, September 10, 1883.

Hon. W. J. Behan, Mayor of New Orleans, City Hall:

Sir—I have the honor to enclose for the consideration of your Honor and the honorable the Common Council of New Orleans, extract from the minutes of the Board of Health, and resolutions unanimously adopted relative to the suppression of small pox.

During the past eight months of 1883, one thousand one hundred and sixty-four citizens of New Orleans have perished from small-pox. The monthly deaths caused by small-pox are as follows: January 76, February 131, March 219, April 261, May 175, June 149, July 84, August 67. The total deaths from all causes including small-pox in New Orleans, during the same period, was 5084. Small-pox has therefore caused nearly one-fourth of all the deaths occurring in New Orleans in 1883.

From the preceding statistics, it is evident that small-pox, has decreased to a marked extent during the months of July and August, and that the present is auspicious for the institution of measures for its arrest.

The plan which I proposed, and which was endorsed by the Board of Health, was briefly to appoint one physician for each ten thousand inhabitants, who should visit every place of business or factory and each habitation, and urge vaccination upon each citizen. A careful census to be made, embracing number of inhabitants, number protected by preceding attacks of small-pox, by vaccination and re-vaccination, and therefore the number refusing to be vaccinated and liable to and unprotected from the disease.

This work should be continued during the months of October, November, December, January, February and March, or until the thorough canvass of the city had been made, and the offer of free vaccination had been made to, and urged upon, every citizen.

The cost of twenty physicians at $50 each per month would be $1000 per month or $6000 per six months. The extended and vital operations of quarantine as well as the important duties connected with the registration of births, deaths and marriages, together with the various sanitary operations of importance, as inspection disinfection, and the promulgation by weekly and annual publications of the mortuary and sanitary operations, absorb the available resources of the Board of Health.

It is therefore essential that the Municipal Government should make the necessary appropriation for the protection of its citizens from this destructive pestilence.

The matter of finance could be conducted in the same manner to that now employed in city sanitation by the Board of Health: each physician's name to be entered upon the pay roll, and said roll to be submitted to the Honorable Common Council and paid by special ordinance. In this manner the work could be stopped, and the expense closed as soon as the city had been inspected, and the vaccination urged upon every citizen and inhabitant.

If I am correctly informed, your honorable body has already expended during 1883, up to August 31, $14,094 for the support of Small-Pox Hospitals; how much more will be required to meet other expenses cannot be estimated.

It would be difficult to estimate the cost, the loss of business, etc. If the value of each human life be rated at the moderate sum of one thousand dollars, then during the eight months of 1883, New Orleans has lost by small-pox (a preventable pestilence) $1,164,000.

(Signed) JOSEPH JONES, M. D.,
President Board of Health, State of Louisiana.

The opposition to vaccination was referable to several causes such as:
1. Ignorance, superstition and prejudice.
2. Stupid and malicious opposition to all measures emanating from the ard of Health for the protection of the health and lives of the people.
3. Disbelief in the protective powers of vaccination.
4. A popular superstition that vaccination during the prevalence of all-pox tended to develope the disease in the person vaccinated.
5. The belief held by many people and by some physicians that the ccine virus has degenerated since its introduction by Edward Jenner in 98.
6. The frequent failure of the bovine virus furnished by the various vac- e farms of the United States.
7. The dread of contracting syphilis, phthisis, erysipelas, scrofula and rosy, through the medium of the vaccine virus.
8. The dread of contracting various diseases of animal origin, through e medium of the *bovine virus.*

These statements, but more especially the 3d, 4th, 5th, 6th, 7th and 8th, positions, demand careful investigation.

The difficulty of procuring reliable vaccine matter during the recent il war as well as the remarkable abnormal phenomena presented by the aine disease in some cases amongst the Confederate (Southern) Army, the author to institute an extended investigation of all subjects bear- upon vaccination; and it is believed to be of paramount importance t the results of these labors should now be fully recorded.

Conceiving that the entire investigation could not be perfected without full and careful persual of the original works of Edward Jenner; and, after the most diligent search for many years in the book stores and raries of the United States, the author was unable to procure or examine se immortal productions, he conducted a similar search amongst the k stores of Paris, London, Edinburgh, Oxford, Liverpool, and Canarvan, les, during a visit to Europe in 1870.

After diligent personal search amongst the book stores of London, I ceeded in obtaining three copies of the works of Edward Jenner, namely: quiry into the causes and effects of the variolæ vaccinæ, a disease dis- ered in some of the Western counties of England particularly Glouces- shire, and known by the name of The Cow-Pox. By Edward Jenner, M. F. R. S. etc.," published in London, June 1798. "Further observations on variolæ vaccinæ," published in London in 1800, in connection with his quiry into the cause and effects of the variolæ vaccinæ." "A continua- n of facts and observations relative to the variolæ vaccinæ or cow-pox, Edward Jenner, M. D. F. R. S. and L. S. etc., London 1800."

Jenner published a third edition of his works in 1801; which was essen- ly the same as the second edition published in 1800, and contained three tinct papers, namely:

An inquiry into the causes and effects of the variolæ vaccinæ."
Further observation on the variolæ vaccinæ."
A continuation of facts and observations relative to the variolæ vac- e."

We have, after careful consideration of the grave situation, arrived at the n conviction, that the public welfare demands, that at this time, when all-pox prevails in the Delta of the Mississippi, and in the commercial tropolis of the Valley, and when, at the same time, mistrust as to efficacy of vaccination, is manifested by the people and by a portion of

the medical profession, *that the original works of Edward Jenner should be reproduced in Louisiana.*

We have selected the third edition of the works of Edward Jenner, published in London in 1801, because we find, upon careful comparison of the three editions, published respectively in 1798, 1800 and 1801; that the latter appears to have received the most careful revision by the author.

The second edition, published in 1800, has written upon the fly-leaves N. Prythorch, Surgeon Carmarthen 1800, December 16; Robert Marsh Williams, seventeenth March, 1841. The corrections have been written at the proper places, in the separate memoirs.

The name of Richard Pearson is written across the title page of the third edition.

I have selected the plates from the first edition published in 1798, because the impressions are better defined, and colored with more care, than those of the second and third editions, the identical plates appearing to have been used in the printing of the three editions. Jenner gives four plates, all illustrative of, and included in, his orginal "inquiry into the causes and effects of the variolæ vaccinæ." The first plate facing page thirty-two, showing the appearance of the hand of a dairy maid, (Sarah Nelmes, Case xvi,) infected with the cow-pox from her masters cows in May 1796, is given in full: the second, third and fourth plates (Case xviii p. 36; Case xx. p. 38; Case xxi. p . 40), have been placed upon a single plate, as it appeared to be a useless expense to reproduce the mere outlines of the arms, these portions showing nothing of note as far as the process and effects of vaccination were concerned.

The following is the title and preface to the first edition of the inquiry of Dr. Edward Jenner.

"An *Inquiry* into the causes and effects of the variolæ vaccinæ, a disease discovered in some of the western counties of England, particularly Gloucestershire, and known by the name of The Cow-Pox. By Edward Jenner, M. D. F. R. S., &c.

Quid Nobis Certius Ipsis Sensibus Esse Potest, Quo Vera ac Falsa Notemus. Lurcretius.

London, printed for the author by Sampson Low, No. 7 Berwick street Soho.

And sold by Law, Ave-Maria Lane; and Murray and Highley, Fleet street, 1798."

TO C. H. PARRY, M. D., AT BATH.

My Dear Friend—In the present age of scientific investigation, it is remarkable that a disease of so peculiar a nature as the cow-pox, which has appeared in this and some of the neighboring counties for such a series of years, should so long have escaped particular attention. Finding the prevailing notions on the subject, both among men of our profession and others, extremely vague and indeterminate, and conceiving that facts might appear at once both curious and useful, I have instituted as strict an inquiry into the causes and effects of this singular malady as local circumstances would admit.

The following pages are the result, which, from motives of the most affectionate regard, are dedicated to you, by

Your sincere friend, EDWARD JENNER.

Berkley, Gloucestershire. June 21, 1798.

AN INQUIRY

— INTO —

THE CAUSES AND EFFECTS

— OF THE —

VARIOLÆ VACCINÆ,

DISEASE DISCOVERED IN SOME OF THE WESTERN COUNTIES OF ENGLAND
PARTICULARLY GLOUCESTERSHIRE, AND KNOWN BY THE NAME OF

THE COW POX.

—BY—

EDWARD JENNER, M. D. F. R. S. &C

——QUID NOBIS CERTIUS IPSIS
SENSIBUS ESSE POTEST, QUO VERA AC FALSA NOTEMUS
LUCRETIUS.

THE THIRD EDITION.

— :o: —

LONDON:
PRINTED FOR THE AUTHOR,
By D. N. Shury, No. 7, Berwick street, Soho;
Sold by Hurst, Paternoster Row; Murray & Highley, Fleet Street; Carpenter
Old Bond Street; and Callow, Crown Court.
1801.

TO THE KING.

Sir—When I first addressed the public on a physiological subject, which I conceived to be of the utmost importance to the future welfare of the human race, I could not presume, in that early stage of the investigation, to lay the result of my inquiries at your Majesty's feet.

Subsequent inquiries instituted not only by myself but by men of the first rank in the medical profession have now confirmed the truth of the theory which I first made known to the world.

Highly honored by the permission to dedicate the result of my inquiries to your Majesty, I am emboldened to solicit your gracious patronage of a discovery which reason fully authorizes me to suppose will prove peculiarly conducive to the preservation of the lives of mankind.

To a Monarch no less justly than emphatically styled the Father of his people, this treatise is inscribed with perfect propriety; for, conspicuous as your Majesty's patronage has been of arts, of sciences and of commerce, yet the most distinguished feature of your character is your paternal care for the dearer interests of humanity.

I am, sir, with the most profound respect, your Majesty's most devoted subject and servant,

EDWARD JENNER.

Berkeley, Gloucestershire, December 20, 1799.

AN INQUIRY, &C., &C.

The deviation of man from the state in which he was originally placed by nature, seems to have proved to him a prolific source of diseases. From the love of splendor, from the indulgences of luxury, and from his fondness for amusement, he has familiarized himself with a great number of animals which may not originally have been intended for his associates.

The wolf, disarmed of ferocity, is now pillowed in the lady's lap.* The cat, the little tiger of our island, whose natural home is the forest, is equally domesticated and caressed. The cow, the hog, the sheep, and the horse, are all, for a variety of purposes, brought under his care and dominion.

There is a disease to which the horse, from his state of domestication, is frequently subject. The farriers have termed it *the Greafe.* It is an inflammation and swelling in the heel, accompanied at its commencement with small cracks or fissures, from which issues a limpid fluid, possessing properties of a very peculiar kind. This fluid seems capable of generating a disease in the human body, (after it has undergone the modification I shall presently speak of), which bears so strong a resemblance to small pox that I think it highly probable that it may be the source of that disease.

In this dairy county a great number of cows are kept, and the office of milking is performed indiscriminately by men and maid servants. One of the former having been appointed to apply dressings to the heels of a horse affected with the malady I have mentioned, and not paying due attention to cleanliness, incautiously bears his part in milking the cows, with some particles of the infectious matter adhering to his fingers. When this is the case it frequently happens that a disease is communicated to the cows, and from the cows to the dairy maids, which spreads through the farm until most of the cattle and domestics feel its unpleasant consequences. This disease has obtained the name of *cow pox.* It appears on the nipples of the cows in the form of irregular pustules. At their first appearance they are commonly of a palish blue, or rather of a color somewhat approaching to livid, and are surrounded by an inflammation. These pustules, unless a timely remedy be applied, frequently degenerate into phagedenic ulcers, which prove extremely troublesome.† The animals become indisposed, and the secretion of the milk is much lessened. Inflamed spots now begin to appear on different parts of the hands of the domestics employed in milking, and sometimes on the wrists, which run on to suppuration, first assuming the appearance of the small vesications produced by a burn. Most commonly they appear about the joints of the fingers and at their extremities, but whatever parts are affected, if the situation will admit, these superficial suppurations put on a circular form, with their edges more elevated than their centre, and of a color distantly approaching to blue. Absorption takes place and tumors appear in each

*The late Mr. John Hunter proved by experiments that the dog is the wolf in a degenerated state.

†They who attend sick cattle in this country find a speedy remedy for stopping the progress of this complaint in those applications which act chemically upon the morbid matter, such as the solutions of the vitriolum zinci, the vitriolum cupri, etc.

illa. The system becomes affected, the pulse is quickened; shiverings, ceeded by heat, general lassitude and pains about the loins and limbs, h vomiting, come on. The head is painful, and the patient is now and affected with delirium.* These symptoms, varying in their degrees of ence, generally continue from one day to three or four, leaving ulcer- sores about the hands, which, from the sensibility of the parts, are troublesome and commonly heal slowly, frequently becoming phage- ic, like those from whence they sprung. During the progress of the ase, the lips, nostrils, eyelids, and other parts of the body, are some- s affected with sores; but these evidently arise from their being heed- ly rubbed or scratched with the patient's infected fingers. No erup- s on the skin have followed the decline of the feverish symptoms in instance that has come under my inspection, one only excepted, and in case a very few appeared on the arms. They were very minute, of a l red color, and soon died away, without advancing to maturation, so I cannot determine whether they had any connection with the preced- symptoms.

us the disease makes its progress from the horse, as I conceive, to the le of the cow, and from the cow to the human subject.

orbid matter of various kinds, when absorbed into the system, may uce effects in some degree similar; but what renders the cow pox virus xtremely singular is that the person who has been thus affected is for- after secure from the infection of the small pox; neither exposure to variolous effluvia nor the insertion of the matter into the skin produc- his distemper.

support of so extraordinary a fact, I shall lay before my reader a t number of instances. But first it is necessary to observe that pus- s sores frequently appear spontaneously on the nipples of the cows, nstances have occurred, though very rarely, of the hands of the ser- s employed in milking being affected with sores in consequence, and of their feeling an indisposition from absorption. These pustules are much milder nature than those which arise from that contagion which itutes the true cow pox. They are always free from the bluish or tint so conspicuous in the pustules in that disease. No erysipelas ds them, nor do they show any phagedenic disposition, as in the other but quickly terminate in a scab, without creating any apparent dis- in the cow. This complaint appears at various seasons of the year, ost commonly in the spring, when the cows are first taken from their r food and fed with grass. It is very apt to appear also when they uckling their young. But this disease is not to be considered as r in any respect to that of which I am treating, as it is incapable of cing any specific effects on the human constitution. However, it is greatest consequence to point it out here, lest the want of discrimi- should occasion an idea of security from the infection of the small which might prove delusive.

CASE I.

h Merrett, now an under gardener to the Earl of Berkeley, lived as a servant farmer near this place, in the year 1770, and occasionally assisted in milking his s cows. Several horses belonging to the farm began to have sore heels, which frequently attended. The cows soon became affected with the cow-pox, and er several sores appeared on his hands. Swellings and stiffness in each axilla

* appear in the sequel that these symptoms arise principally from the irritation of the sores, and the primary action of the vaccine virus upon the constitution.

followed, and he was so much indisposed for several days as to be incapable of pursuing his ordinary employment. Previously to the appearance of the distemper among the cows there was no fresh cow brought into the farm, nor any servant employed who was affected with the cow-pox.

In April, 1795, a general inoculation taking place here, Merrett was inoculated with his family, so that a period of twenty-five years had elapsed from his having the cow pox to this time. However, though the variolous matter was repeatedly inserted into his arm, I found it impracticable to infect him with it, an efflorescence only, taking on an erysipelatous look about the centre, appearing on the skin near the punctured parts. During the whole time that his family had the small-pox, one of whom had it very full, he remained in the house with them, but received no injury from exposure to the contagion.

It is necessary to observe that the utmost care was taken to ascertain, with the most scrupulous precision, that no one whose case is here adduced had gone through the small-pox previous to these attempts to produce that disease.

Had these experiments been conducted in a large city, or in a populous neighborhood, some doubts might have been entertained; but here, where population is thin, and where such an event as a person's having had the small-pox is always faithfully recorded, no risk of inaccuracy in this particular can arise.

CASE II.

Sarah Portlock, of this place, was infected with the cow-pox, when a servant at a farmer's in the neighborhood, twenty-seven years ago.*

In the year 1792, conceiving herself, from this circumstance, secure from the infection of the small-pox, she nursed one of her own children, who had accidentally caught the disease, but no indisposition ensued. During the time she remained in the infected room, variolous matter was inserted into her arms, but without any further effect than in the preceding case.

CASE III.

John Phillips, a tradesman of this town, had the cow-pox at so early a period as nine years of age. At the age of sixty-two I inoculated him, and was very careful in selecting matter in its most active state. It was taken from the arm of a boy just before the commencement of the eruptive fever, and instantly inserted. It very speedily produced a sting-like feel in the part. An efflorescence appeared, which on the fourth day was rather extensive, and some degree of pain and stiffness was felt about the shoulder; but on the fifth day these symptoms began to disappear, and in a day or two after were entirely off, without producing any effect on the system.

CASE IV.

Mary Barge, of Woodford, in this parish, was inoculated with variolous matter the year 1791. An efflorescence of a palish red color soon appeared about the part where the matter was inserted, and spread itself rather extensively, but died away in a few days without producing any variolous symptoms.† She has since been repeatedly employed as a nurse to small-pox patients without experiencing any ill consequence. This woman had the cow-pox when she lived in the service of a farmer in this parish thirty-one years before.

CASE V.

Mrs. H———, a respectable gentlewoman ot this town, had the cow-pox when very young. She received the infection in a manner that is not common. It was given

*I have purposely selected several cases in which the disease had appeared at a very distant period previous to the experiments made with variolous matter, to show that the change produced in the constitution is not affected by time.

†It is remarkable that variolous matter, when the system is disposed to reject it, should excite inflammation on the part to which it is applied more speedily than when it produces the small-pox. Indeed, becomes almost a criterion by which we can determine whether the infection will be received or not. seems as if a change, which endures through life, had been produced in the action, or disposition to action in the vessels of the skin; and it is remarkable, too, that whether this change has been effected by small-pox or the cow-pox that the disposition to sudden cuticular inflammation is the same on the applicati of variolous matter.

means of her handling some of the same utensils* which were in use among the servants of the family, who had the disease from milking infected cows. Her hands had many of the cow-pox sores upon them, and they were communicated to her nose, which became inflamed and very much swollen. Soon after this event Mrs. H——— was exposed to the contagion of the small-pox, where it was scarcely possible for her to have escaped, had she been susceptible of it, as she regularly attended a relative who had the disease in so violent a degree that it proved fatal to him.

In the year 1778 small-pox prevailed very much at Berkeley, and Mrs. H———, not feeling perfectly satisfied respecting her safety (no indisposition having followed her exposure to the small-pox), I inoculated her with active variolous matter. The same appearance followed as in the preceding cases—an efflorescence on the arm, without any effect on the constitution.

CASE VI.

It is a fact so well known among our dairy farmers, that those who have had the small-pox either escape the cow-pox or are disposed to have it slightly, that as soon as the complaint shows itself among the cattle, assistants are procured, if possible, who are thus rendered less susceptible of it, otherwise the business of the farm could scarcely go forward.

In the month of May, 1796, the cow-pox broke out at Mr. Baker's, a farmer who lives near this place. The disease was communicated by means of a cow, which was purchased in an infected state at a neighboring fair, and not one of the farmer's cows, consisting of thirty, which were at that time milked, escaped the contagion. The family consisted of a man servant, two dairy maids and a servant boy, who, with the farmer himself, were twice a day employed in milking the cattle. The whole of this family, except Sarah Wynne, one of the dairymaids, had gone through the small-pox. The consequence was that the farmer and the servant boy escaped the infection of the cow-pox entirely, and the servant man and one of the maid servants had each of them nothing more than a sore on one of their fingers, which produced no disorder in the system. But the other dairy-maid, Sarah Wynne, who never had the small-pox, did not escape in so easy a manner. She caught the complaint from the cows, and was affected with the symptoms described in the fifth page in so violent a degree that she was confined to her bed, and rendered incapable for several days of pursuing her ordinary vocations in the farm.

March 28th, 1797, I inoculated this girl, and carefully rubbed the variolous matter into slight incisions made upon the left arm. A little inflammation appeared in the usual manner around the parts where the matter was inserted, but so early as the fifth day it vanished entirely without producing any effect on the system.

CASE VII.

Although the preceding history pretty clearly evinces that the constitution is far less susceptible of the contagion of the cow-pox after it has felt that of the small-pox, and although in general, as I have observed, they who have had the small-pox, and are employed in milking cows which are infected with the cow-pox, either escape the disorder, or have sores on the hands without feeling any general indisposition, yet the animal economy is subject to some variation in this respect, which the following relation will point out:

In the summer of the year 1796 the cow-pox appeared at the farm of Mr. Andrews, a considerable dairy adjoining to the town of Berkeley. It was communicated, as in the preceding instance, by an infected cow purchased at a fair in the neighborhood. The family consisted of the farmer, his wife, two sons, a man and a maid servant, all of whom, except the farmer, who was fearful of the consequences, bore a part in milking the cows. The whole of them, exclusive of the man servant, had regularly gone through the small-pox; but in this case no one who milked the cows escaped the contagion. All of them had sores upon their hands, and some degree of general indisposition, preceded by pains and tumors in the axilla; but there was no comparison in the severity of the disease as it was felt by the servant man, who had escaped the small-pox, and by those of the family who had not; for, while he was confined to his bed, they were able, without much inconvenience, to follow their ordinary business.

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*When the cow-pox has prevailed in the dairy, it has often been communicated to those who have milked the cows by the handle of the milk pail.

February 13, 1797, I availed myself of an opportunity of inoculating William Rodway, the servant man above alluded to. Variolous matter was inserted into both his arms; in the right by means of superficial incisions, and into the left by slight punctures into the cutis. Both were perceptibly inflamed on the third day. After this the inflammation about the punctures soon died away, but a small appearance of erysipelas was manifest about the edges of the incisions till the eighth day, when a little uneasiness was felt for the space of half an hour in the right axilla. The inflammation then hastily disappeared, without producing the most distant mark of affection of the system.

CASE VIII.

Elizabeth Wynne, aged fifty-seven, lived as a servant with a neighboring farmer thirty-eight years ago. She was then a dairy maid, and the cow-pox broke out among the cows. She caught the disease with the rest of the family, but, compared with them, had it in a very slight degree, one very small sore only breaking out on the little finger of her left hand, and scarcely any perceptible indisposition following it.

As the malady had shown itself in so slight a manner, and as it had taken place at so distant a period of her life, I was happy with the opportunity of trying the effects of variolous matter upon her condition, and on the twenty-eighth of March, 1797, I inoculated her by making two superficial incisions on the left arm, on which the matter was cautiously rubbed. A little efflorescence soon appeared, and a tingling sensation was felt about the parts, where the matter was inserted, until the third day, when both began to fade, and so early as the fifth day it was evident that no indisposition would follow.

CASE IX.

Although the cow-pox shields the constitution from the small-pox, and the small-pox proves a protection against its own future poison, yet it appears that the human body is again and again susceptible of the infectious matter of the cow-pox, as the following history will demonstrate:

William Smith, of Pyrton, in this parish, contracted this disease when he lived with a neighboring farmer in the year 1780. One of the horses belonging to the farm had sore heels, and it fell to his lot to attend him. By these means the infection was carried to the cows, and from the cows it was communicated to Smith. On one of his hands were several ulcerated sores, and he was affected with such symptoms as have been before described.

In the year 1791 the cow-pox broke out at another farm where he then lived as a servant, and he became affected with it a second time; and in the year 1794 he was so unfortunate as to catch it again. The disease was equally as severe the second and third time as it was on the first.*

In the spring of the year 1795 he was twice inoculated, but no affection of the system could be produced from the variolous matter; and he has since associated with those who had the small-pox in its most contagious state without feeling any effect from it.

CASE X.

Simon Nichols lived as a servant with Mr. Bromedge, a gentleman who resides on his own farm, in this parish, in the year 1782. He was employed in applying dressings to the sore heels of one of his master's horses, and at the same time assisted in milking the cows. The cows became affected in consequence, but the disease did not show itself on their nipples till several weeks after he had begun to dress the horse. He quitted Mr. Bromedge's service, and went to another farm, without any sores upon him; but here his hands soon began to be affected in the common way, and he was much indisposed, with the usual symptoms. Concealing the nature of the malady from Mr. Cole, his new master, and being there also employed in milking, the cow-pox was communicated to the cows.

Some years afterwards Nichols was employed in a farm where the small-pox broke out, when I inoculated him with several other patients, with whom he continued during the whole time of their confinement. His arm inflamed, but neither the inflammation nor his associating with the inoculated family produced the least effect upon his constitution.

*This is not the case in general—a second attack is commonly very slight, and so, I am informed, it is among the cows. The reader will find further observations on this subject in the sequel. These repeated indispositions must have arisen from the local irritation, and not from the specific action of the vaccine virus.

CASE XI.

William Stinchcomb was a fellow servant with Nichols at Mr. Bromedge's farm, at the time the cattle had the cow-pox, and he was unfortunately infected by them. His left hand was very severely affected with several corroding ulcers, and a tumor of considerable size appeared in the axilla of that side. His right hand had only one small sore upon it, and no tumor discovered itself in the corresponding axilla.

In the year 1792 Stinchcomb was inoculated with variolous matter, but no consequences ensued beyond a little inflammation in the arm for a few days. A large party were inoculated at the same time, some of whom had the disease in a more violent degree than is commonly seen from inoculation. He purposely associated with them, but could not receive the small-pox.

During the sickening of some of his companions their symptoms so strongly recalled to his mind his own fate when sickening with the cow-pox, that he very pertinently remarked their striking similarity.

CASE XII.

The paupers of the village of Tortworth, in this county, were inoculated by Mr. Henry Jenner, surgeon, of Berkeley, in the year 1795. Among them eight patients presented themselves who had at different times in their lives had the cow-pox. One of them, Hester Walkley, I attended with that disease when he lived in the service of a farmer in the same village in the year 1782; but neither this woman, nor any other of the patients who had gone through the cow-pox, received the variolous infection either from the arm or from mixing in the society of the other patients who were inoculated at the same time. This state of security proved a fortunate circumstance, as many of the poor women were at the same time in a state of pregnancy.

CASE XIII.

One instance has occurred to me of the system being affected from the matter issuing from the heels of horses, and of its remaining afterwards unsusceptible of the variolous contagion; another, where the small-pox appeared obscurely; and a third in which its complete existence was positively ascertained.

First, Thomas Pearce is the son of a smith and farrier near to this place. He never had the cow-pox, but in consequence of dressing horses with sore heels at his father's, when a lad, he had sores on his fingers, which suppurated, and which occasioned a pretty severe indisposition. Six years afterwards I inserted variolous matter into his arm repeatedly, without being able to produce anything more than a slight inflammation, which appeared very soon after the matter was applied, and afterwards I exposed him to the contagion of the small-pox with as little effect*

CASE XIV.

Secondly, Mr. James Cole, a farmer in this parish, had a disease from the same source as related in the preceding case, and some years after was inoculated with variolous matter. He had a little pain in the axilla, and felt a slight indisposition for three or four hours. A few eruptions showed themselves on the forehead, but they very soon disappeared without advancing to maturation.

CASE XV.

Although in the two former instances the system seemed to be secured, or nearly so, from variolous infection by the absorption of matter from sores produced by the diseased heels of horses, yet the following case renders it probable that this cannot be entirely relied upon until a disease has been generated by the morbid matter from the horse on the nipple of the cow, and passed through that medium to the human subject.† Mr. Abraham Riddiford, a farmer at Stone, in this parish, in consequence of dressing a mare that had sore heels, was affected with very painful sores in both his hands, tumors in each axilla, and severe and general indisposition. A surgeon in the neighbor-

* It is a remarkable fact, and well known to many, that we are frequently foiled in our endeavors to communicate the small-pox by inoculation to blacksmiths, who in the country are farriers. They often, as in the above instance, either resist the contagion entirely, or have the disease anomalously. Shall we not be able now to account for this on a rational principle?

† The succeeding part will give further explanations of this subject.

hood attended him, who, knowing the similarity between the appearance of the sores upon his hands and those produced by the cow-pox, and being acquainted also with the effects of that disease on the human constitution, assured him that he never need to fear the infection of the small-pox: but this assertion proved fallacious, for, on being exposed to the infection upwards of twenty years afterwards, he caught the disease, which took its regular course in a very mild way. There certainly was a difference perceptible, although it is not easy to describe it, in the general appearance of the pustules from that which we commonly see. Other practitioners, who visited the patient at my request, agreed with me in this point, though there was no room left for suspicion as to the reality of the disease, as I inoculated some of his family from the pustules, who had the small-pox, with its usual appearances, in consequence.

CASE XVI.

Sarah Nelmes, a dairy maid at a farmer's near this place, was infected with the cow-pox from her master's cows, in May, 1796. She received the infection on a part of the hand which had been previously, in a slight degree, injured by a scratch from a thorn. A large, pustulous sore, and the usual symptoms accompanying the disease, were produced in consequence. The pustule was so expressive of the true character of the cow-pox, as it commonly appears upon the hand, that I have given a representation of it in the annexed plate. The two small pustules on the wrists arose also from the application of the virus to some minute abrasions of the cuticle, but the livid tint, if they ever had any, was not conspicuous at the time I saw the patient. The pustule on the fore-finger shows the disease in an earlier stage. It did not actually appear on the hand of this young woman, but was taken from that of another, and is annexed for the purpose of representing the malady after it has newly appeared.

CASE XVII.

The more accurately to observe the progress of the infection, I selected a healthy boy, about eight years old, for the purpose of inoculation for the cow-pox. The matter was taken from a sore on the hand of a dairy maid*, who was infected by her master's cows, and it was inserted on the fourteenth of May, 1796, into the arm of the boy, by means of two superficial incisions, barely penetrating the cutis, each about half an inch long.

On the seventh day he complained of uneasiness in the axilla, and on the ninth he became a little chilly, lost his appetite, and had a slight headache. During the whole of this day he was perceptibly indisposed, and spent the night with some degree of restlessness, but on the following day he was perfectly well.

The appearance of the incisions in their progress to a state of maturation were much the same as when produced in a similar manner by variolous matter.† The only difference which I perceived was in the state of the limpid fluid arising from the action of virus, which assumed rather a darker hue, and in that of the afflorescence spreading round the incisions, which had more of an erysipelatous look than we commonly perceive when variolous matter has been made use of in the same manner; but the whole died away (leaving on the inoculated parts scabs and subsequent scars) without giving me or my patient the least trouble.

In order to ascertain whether the boy, after feeling so slight an affection of the system from the cow-pox virus, was secure from the contagion of the small-pox, he was inoculated the first of July following with variolous matter, immediately taken from a pustule. Several slight punctures and incisions were made on both his arms, and the matter was carefully inserted, but no disease followed. The same appearances were observable on the arms as we commonly see when a patient has had variolous matter applied, after having either the cow-pox or the small-pox. Several months afterwards he was again inoculated with variolous matter, but no sensible effect was produced on the constitution.

Here my researches were interrupted till the spring of the year 1798, when, from the wetness of the early part of the season, many of the farmer's horses in this neighborhood were affected with sore heels, in consequence of which the cow-pox broke out among several of our dairies, which afforded me an opportunity of making farther observations upon this curious disease.

*From the sore on the hand of Sarah Nelmes.—See the preceding case and the plate.

†This appearance was, in a great measure, new to me, and I ever shall recollect the pleasant sensations it excited; as, from its similarity to the pustule produced by variolous inoculation, it incontestibly pointed out the close connection between the two diseases, and almost anticipated the result of my future experiments.



Fig. 76: *Hand of Sarah Nelmes infected with the Cow Pox, May,* 1796. *Plate* 1, *Case XVI, of "An inquiry into the causes and effects of the Variolæ Vaccinæ." Edward Jenner.*

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A mare, the property of a person who keeps a dairy in a neighboring parish, began to ave sore heels the latter end of the month of February, 1798, which were occasionally ashed by the servant men of the farm. Thomas Virgoe, William Wherret and William aynes, who, in consequence became affected with sores in their hands, followed by in-amed lymphatic glands in the arms and axilla, shiverings succeeded by heat, lassitude nd general pains in the limbs. A single paroxysm terminated the disease, for within venty-four hours they were free from general indisposition, nothing remaining but the res on their hands. Haynes and Virgoe, who had gone through the small-pox from oculation, described their feelings as very similar to those which affected them on ckening with that malady. Wherret never had had the small-pox. Haynes was daily nployed as one of the milkers at the farm, and the disease began to show itself among ie cows about ten days after he first assisted in washing the mare's heels. Their nip-es became sore in the usual way, with bluish pustules; but as remedies were early pplied they did not ulcerate to any extent.

CASE XVIII.

John Baker, a child of five years old, was inoculated March 16, 1798, with matter ken from a pustule on the hand of Thomas Virgoe, one of the servants who had been fected from the mare's heels. He became ill on the sixth day with symptoms similar those excited by cow-pox matter. On the eighth day he was free from indisposition. There was some variation in the appearance of the pustule on the arm. Although it newhat resembled a small-pox pustule, yet its similitude was not so conspicuous as hen excited by matter from the nipple of the cow, or when the matter has passed from ence through the medium of the human subject. (See plate No. 2.)

This experiment was made to ascertain the progress and subseqent effects of the dis-se when thus propagated. We have seen that the virus from the horse, when it oves infectious to the human subject, is not to be relied upon as rendering the system cure from variolous infection, but that the matter produced by it on the nipple of the w is perfectly so. Whether its passing from the horse through the human constitu-on, as in the present instance, will produce a similar effect, remains to be decided. his would now have been effected, but the boy was rendered unfit for inoculation, from ving felt the effects of a contagious fever in a work house, soon after this experiment as made.

CASE XIX.

William Summers, a child of five years and a half old, was inoculated the same day th Baker, with matter taken from the nipples of one of the infected cows, at the farm luded to in page 32. He became indisposed on the sixth day, vomited once, and felt e usual slight symptoms till the eighth day, when he appeared perfectly well. The ogress of the pustule, formed by the infection of the virus, was similar to that noticed Case XVII, with this exception—its being free from the livid tint observed in that ntance.

CASE XX.

From William Summers the disease was transferred to William Pead, a boy of eight ars old, who was inoculated March 28. On the sixth day he complained of pain in e axilla, and on the seventh was affected with the common symptoms of a patient kening with the small-pox from inoculation, which did not terminate till the third y after the seizure. So perfect was the similarity to the variolous fever, that I as induced to examine the skin, conceiving there might have been some eruptions, but ne appeared. The efflorescent blush around the part punctured in the boy's arm was truly characteristic of that which appears on variolous inoculation, that I have given epresentation of it. The drawing was made when the pustule was beginning to die ay, and the *areola* retiring from the centre. (See plate No. 3.)

CASE XXI.

April 5, several children and adults were inoculated from the arm of William Pead. e greater part of them sickened on the sixth day, and were well on the seventh, but three of the number a secondary indisposition arose in consequence of an extensive sipelatous inflammation which appeared on the inoculated arms. It seemed to arise n the state of the pustule, which spread out, accompanied with some degree of pain, about half the diameter of a sixpence. One of these patients was an infant of half a

year old. By the application of mercurial ointment to the inflamed parts (a treatment recommended under similar circumstances in the inoculated small-pox) the complaint subsided without giving much trouble.

Hannah Excell, a healthy girl of seven years old, and one of the patients above mentioned, received the infection from the insertion of the virus under the cuticle of the arm in three distinct points* The pustules which arose in consequence so much resembled, on the ninth day, those appearing from the insertion of variolous matter, that an experienced inoculator would scarcely have discovered a shade of difference at that period. Experience now tells me that almost the only variation which follows consists in the pustulous fluids remaining limpid nearly to the time of its total disappearance, and not, as in the direct small-pox, becoming purulent. (See plate No. 4.)

CASE XXII.

From the arm of this girl matter was taken and inserted April 12 into the arms of John Marklove, one year and a half old.

Robert F. Jenner, eleven months old ;

Mary Pead, five years old ; and

Mary James, six years old.

Among these, Robert F. Jenner did not receive the infection. The arms of the other three inflamed properly, and began to affect the system in the usual manner ; but, being under some apprehension from the preceding cases that a troublesome erysipelas might arise, I determined on making an experiment, with the view of cutting off its source. Accordingly, on the eighth day after the patients had felt an indisposition that was just perceptible, of about twelve hours, I applied in two of these cases out of the three, on the vesicle formed by the virus, a little mild caustic, composed of equal parts of quicklime and soap, and suffered it to remain on the part six hours.† It seemed to give the children but little uneasiness, and effectually answered my intention in preventing the appearance of erysipelas. Indeed, it seemed to do more, for in half an hour after its application, the indisposition of the children ceased.‡ These precautions were, perhaps, unnecessary, as the arm of the third child, Mary Pead, which was suffered to take its common course, scabbed quickly, without any erysipelas.‖

CASE XXIII.

From the child's arm matter was taken and transferred to that of J. Barge, a boy of seven years old. He sickened on the eight day, went through the disease with the usual slight symptoms, and without any inflammation on the arm beyond the common efflorescence surrounding the pustule, and appearance so often seen in inoculated small-pox.

After the many fruitless attempts to give the small-pox to those who had had the cow-pox, it did not appear necessary, nor was it convenient to me, to inoculate the whole of those who had been the subject of these late trials ; yet I thought it right to see the effects of variolous matter on some of them, particularly William Summers, the first of these patients who had been infected with matter taken from the cow. He was therefore inoculated with variolous matter from a fresh pustule ; but, as in the preceding cases, the system did not feel the effects of it in the smallest degree. I had an opportunity, also, of having this boy (Barge) and William Pead inoculated by my nephew, Mr. Henry Jenner, whose report to me is as follows : "I have inoculated Pead and Barge, two of the boys whom you lately infected with the cow-pox. On the second day the incisions were inflamed, and there was a pale, inflammatory stain around them. On the third day these appearances were still increasing, and their arms itched considerably. On the fourth day the inflammation was evidently subsiding, and on the sixth it was scarcely perceptible. No symptom of indisposition followed.

"To convince myself that the variolous matter made use of was in a perfect state, I at the same time inoculated a patient with some of it who had never gone through the cow-pox, and it produced the small-pox in the usual regular manner."

These experiments afforded me much satisfaction ; they proved that the matter, in passing from one human subject to another, through five gradations, lost none of its

*This was not done intentionally, but from the accidental touch of the lancet, one puncture being always sufficient.

†Perhaps a few touches with the lapis septicus would have proved equally efficacious.

‡What effect would a similar treatment produce in inoculation for the small-pox ?

‖The subsequent part of this treatise will sufficiently show the proper practice in cases of inflammation of the inoculated arm.

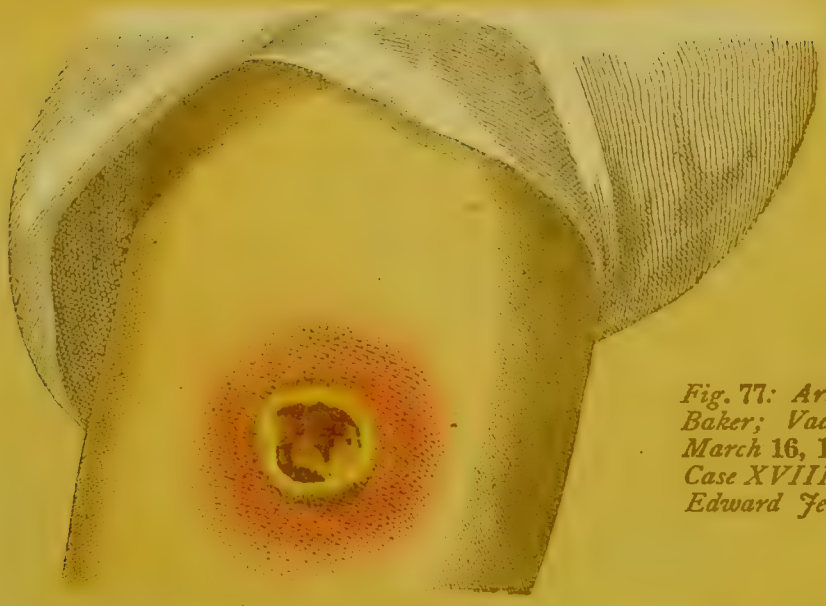


Fig. 77: *Arm of John Baker; Vaccinated March* 16, 1798. *Plate Case XVIII. Inquiry, Edward Jenner.*

Fig. 78: *Arm of William Pead. Case XX. Plate* 3. *Inquiry, Edward Jenner*





Fig 79: *Arm of Hannah Exce Case XXI. Plate No.* 4. *quiry into Variolæ Vaccin Edward Jenner.*

ginal properties, J. Barge being the fifth who received the infection successively
n William Summers, the boy to whom it was communicated from the cow.
shall now conclude this inquiry with some general observations on the subject, and
some thers which are interwoven with it.

Although, I presume, it may be unnecessary to produce further testimony in support
my assertion "that the cow-pox protects the human constitution from the infection
the small-pox," yet it affords me considerable satisfaction to say that Lord Somer-
le, the president of the Board of Agriculture, to whom this paper was shown by Sir
seph Banks. has found, upon inquiry, that the statements were confirmed by the con-
rring testimony of Mr. Dollan, a surgeon, who resides in a dairy country remote
m this, in which these observations were made. With respect to the opinion
duced "that the source of the infection is a peculiar morbid matter arising in the
rse," although I have not been able to prove it from actual experiments conducted
mediately under my own eye, yet the evidence I have adduced appears sufficient to
ablish it.

They who are not in the habit of conducting experiments may not be aware of the co-
idence of circumstances necessary for their being managed so as to prove perfectly
cisive; nor how often men engaged in professional pursuits are liable to interruptions
hich disappoint them almost at the instant of their being accomplished. However, I
l no room for hesitation respecting the common origin of the disease, being well con-
ced that it never appears among the cows (except it can be traced to a cow intro-
ced among the general herd which has been previously infected, or to an infected
vant), unless they have been milked by some one who, at the same time, has the care
a horse affected with diseased heels.

The spring of the year 1797, which I intended particularly to have devoted to the
mpletion of this investigation, proved, from its dryness, remarkably averse to my
shes; for it frequently happens, while the farmer's horses are exposed to the cold rains
hich fall at that season, that their heels become diseased, and no cow-pox then
peared in the neighborhood.

The active quality of the virus from the horse's heels is greatly increased after it has
ed on the nipples of the cow, as it rarely happens that the horse affects his dresser
th sores, and as rarely that a milk maid escapes the infection when she milks infected
ws. It is most active at the commencement of the disease, even before it has acquired
us-like appearance; indeed, I am not confident whether this property in the matter
es not entirely cease as soon as it is secreted in the form of pus. I am induced to
nk it does cease*, and that it is the thin, darkish-looking fluid only, oozing from the
wly formed cracks in the heels, similar to what sometimes appears from erysipelatous
sters, which gives the disease. Nor am I certain that the nipples of the cow are at
times in a state to receive the infection. The appearance of the disease in the spring
l the early part of the summer, when they are disposed to be affected with spontane-
s eruptions, so much more frequently than at other seasons, induces me to think that
virus from the horse must be received upon them when they are in this state, in
ler to produce effects. Experiments, however, must determine these points. But it
lear that when the cow-pox virus is once generated that the cows cannot resist the
ntagion, in whatever state their nipples may chance to be, if they are milked with
infected hand.

Whether the matter, either from the cow or the horse, will affect the sound skin of
human body, I cannot positively determine; probably it will not, unless on those
rts where the cuticle is extremely thin, as on the lips, for example. I have known an
tance of a poor girl who produced an ulceration on her lip by frequently holding her
ger to her mouth to cool the raging of a cow-pox sore by blowing upon it. The
nds of the farmer's servants here, from the nature of their employments, are con-
ntly exposed to those injuries which occasion abrasions of the cuticle, to punctures
m thorns and such like accidents, so that they are always in a state to feel the conse-
ences of exposure to infectious matter.

It is singular to observe that the cow-pox virus, although it renders the constitution
susceptible of the variolous, should, nevertheless, leave it unchanged with respect to
own action. I have already produced an instance† to point this out, and shall now
roborate it with another.

Elizabeth Wynne, who had the cow-pox in the year 1759, was inoculated with vario-
s matter, without effect, in the year 1797, and again caught the cow-pox in the year
8. When I saw her, which was on the eighth day after she received the infection, I
nd her affected with general lassitude, shiverings, alternating with heat, coldness

* It is very easy to procure pus from old sores on the heels of horses. This I have often inserted into
itches made with a lancet, on the sound nipples of cows, and have seen no other effects from it than
ple inflammation.

† See case IX.

of the extremities, and a quick and irregular pulse. These symptoms were preceded by a pain in the axilla. On her hand was one large, pustulous sore, which resembled that delineated in plate No. 1.*

It is curious, also, to observe that the virus, which, with respect to its effects, is undetermined and uncertain previously to its passing from the horse through the medium of the cow,† should then not only become more active, but should invariably and completely possess those specific properties which induce in the human constitution symptoms similar to those of the variolous fever, and effect in it that peculiar change which forever renders it unsusceptible of the variolous contagion.

May it not then be reasonably conjectured that the source of the small-pox is morbid matter of a peculiar kind, generated by a disease in the horse, and that accidental circumstances may have again and again arisen, still working new changes upon it, until it has acquired the contagious and malignant form under which we now commonly see it making its devastations among us? And, from a consideration of the change which the infectious matter undergoes from producing a disease on the cow, may we not conceive that many contagious diseases now prevalent amongst us may owe their present appearance not to a simple, but to a compound, origin? For example, is it difficult to imagine that the measles, the scarlet fever, and the ulcerous sore throat with a spotted skin, have all sprung from the same source, assuming some variety in their forms according to the nature of their new combinations? The same question will apply respecting the origin of many other contagious diseases which bear a strong analogy to each other.

There are certainly more forms than one, without considering the common variation between the confluent and distinct, in which the small-pox appears in what is called the natural way. About seven years ago a species of small-pox spread through many of the towns and villages of this part of Gloucestershire. It was of so mild a nature that a fatal instance was scarcely ever heard of, and consequently so little dreaded by the lower orders of the community, that they scrupled not to hold the same intercourse with each other as if no infectious disease had been present among them. I never saw nor heard of an instance of its being confluent. The most accurate manner, perhaps, in which I can convey an idea of it is, by saying, that had fifty individuals been taken promiscuously and infected by exposure to this contagion, they would have had as mild and light a disease as if they had been inoculated with variolous matter in the usual way. The harmless manner in which it showed itself could not arise from any peculiarity either in the season or the weather, for I watched its progress upwards of a year without perceiving any variation in its general appearance. I consider it, then, as a variety of the small-pox.‡

In some of the preceding cases I have noticed the attention that was paid to the state of the variolous matter previous to the experiment of inserting it into the arms of those who had gone through the cow-pox. This I conceived to be of great importance in conducting these experiments, and were it always properly attended to by those who inoculate for the small-pox, it might prevent much subsequent mischief and confusion. With the view of enforcing so necessary a precaution, I shall take the liberty of digressing so far as to point out some unpleasant facts, relative to mismanagement in this particular, which have fallen under my own observation.

A medical gentleman (now no more), who, for many years, inoculated in this neighborhood, frequently preserved the variolous matter intended for use, on a piece of lint or cotton, which, in its fluid state, was put into a vial, corked and conveyed into a warm pocket, a situation certainly favorable for speedily producing putrefaction in it. In this state (not unfrequently after it had been taken several days from the pustules), it was inserted into the arms of his patients, and brought on inflammation of the incised parts, swellings of the axillary glands, fever and sometimes eruptions. But what was this disease? Certainly not the small-pox, for the matter having from putrefaction lost or suffered a derangement in its specific properties, was no longer capable of producing that malady, those who had been inoculated in this manner being as much subject to the contagion of the small-pox as if they had never been under the influence of this artificial disease; and many, unfortunately, fell victims to it who thought themselves in perfect security. The same unfortunate circumstance of giving a disease, supposed to be the small-pox, with inefficaceous variolous matter, having occurred under the direction of some other practitioners within my knowledge, and probably from the

*As I have before observed, these symptoms probably arose from the irritation of the sore, which was very painful.

†Further explanation will be adduced on this subject.

‡My friend, Dr. Hicks, of Bristol, who, during the prevalence of this distemper, was resident at Gloucester, and physician to the hospital there, where it was seen soon after its first appearance in this country, had opportunities of making numerous observations upon it, which it is his intention to communicate to the public.

same incautious method of securing the variolous matter, I avail myself of this opportunity of mentioning what I conceive to be of great importance, and, as a further cautionary hint, I shall again digress so far as to add another observation on the subject of inoculation.

Whether it be yet ascertained by experiment that the quantity of variolous matter inserted into the skin makes any difference with respect to the subsequent mildness or violence of the disease, I know not; but I have the strongest reason for supposing that if either the punctures or incisions be made so deep as to go through it, and wound the adipose membrane, that the risk of bringing on a violent disease is greatly increased. I have known an inoculator, whose practice was "to cut deep enough (to use his own expression) to see a bit of fat," and there to lodge the matter. The great number of bad cases, independent of inflammations and abscesses on the arms, and the fatality which attended this practice was almost inconceivable, and I cannot account for it on any other principle than that of the matter being placed in this situation instead of the skin.

It was the practice of another, whom I well remember, to pinch up a small portion of the skin on the arms of his patients, and to pass through it a needle, with a thread attached to it, previously dipped in variolous matter. The thread was lodged in the perforated parts, and consequently left in contact with the cellular membrane. This practice was attended with the same ill success as the former. Although it is very improbable that any one would now inoculate in this rude way by design, yet these observations may tend to place a double guard over the lancet, when infants, whose skins are comparatively so very thin, fall under the care of the inoculator.

A very respectable friend of mine, Dr. Hardwicke, of Sodbury, in this county, inoculated great numbers of patients previous to the introduction of the more modern method by Sutton, and with such success that a fatal instance occurred as rarely as since that method has been adopted. It was the doctor's practice to make as slight an incision as possible upon the skin, and there to lodge a thread saturated with the variolous matter. When his patients became indisposed, agreeably to the custom then prevailing, they were directed to go to bed, and were kept moderately warm. Is it not probable, then, that the success of the modern practice may depend more upon the method of invariably depositing the virus in or upon the skin than on the subsequent treatment of the disease?

I do not mean to insinuate that exposure to cool air, and suffering the patient to drink cold water when hot and thirsty, may not moderate the eruptive symptoms and lessen the number of pustules; yet, to repeat my former observation, I cannot account for the uninterrupted success, or nearly so, of one practitioner, and the wretched state of the patients under the care of another, where, in both instances, the general treatment did not differ essentially, without conceiving it to arise from the different modes of inserting the matter for the purpose of producing the disease. As it is not the identical matter inserted which is absorbed into the constitution, but that which is, by some peculiar process in the animal economy, generated by it, is it not probable that different parts of the human body may prepare or modify the virus differently? Although the skin, for example, adipose membrane, or mucous membranes, are all capable of producing the variolous virus by the stimulous given by the particles originally deposited upon them, yet I am induced to conceive that each of these parts is capable of producing some variation in the qualities of the matter previous to its affecting the constitution. What else can constitute the difference between the small-pox when communicated casually, or in what has been termed the natural way, or when brought on artificially through the medium of the skin? After all are the variolous particles, possessing their true specific and contagious principles, ever taken up and conveyed by the lymphatics unchanged into the blood vessels? I imagine not. Were this the case, should we not find the blood sufficiently loaded with them in some stages of the small-pox to communicate the disease by inserting it under the cuticle, or by spreading it on the surface in the shape of an ulcer? Yet experiments have determined the impracticability of its being given in this way, although it has been proved that variolous matter, when much diluted with water, and applied to the skin in the usual manner, will produce the disease. But it would be digressing beyond a proper boundary to go minutely into this subject here.

At what period the cow-pox was first noticed here is not upon record. Our oldest farmers were not unacquainted with it in their earliest days, when it appeared among their farms without any deviation from the phenomena which it now exhibits. Its connection with the small-pox seems to have been unknown to them. Probably the general introduction of inoculation first occasioned the discovery.

Its rise in this country may not have been of very remote date, as the practice of milking cows might formerly have been in the hands of women only, which, I believe, is the case now in some other dairy countries, and consequently that the cows might not in former times have been exposed to the contagious matter brought by the men servants from the heels of horses. Indeed, a knowledge of the source of the infection is new in

the minds of most of the farmers in this neighborhood, but has at length produced good consequences, and it seems probable from the precautions they are now disposed to adopt that the appearance of the cow-pox here may either be entirely extinguished or become extremely rare.

Should it be asked whether this investigation be a matter of mere curiosity, or whether it tend to any benefical purpose, I should answer that, notwithstanding the happy effects of inoculation, with all the improvements which the practice has received since its first introduction into this country, it not very unfrequently produces deformity of the skin, and sometimes, under the best management, proves fatal.

These circumstances must naturally create in every instance, some degree of painful solicitude for its consequences. But as I have never known fatal effects arise from the cow-pox, even when impressed in the most unfavorable manner, producing extensive inflammations and suppurations on the hands, and as it clearly appears that this disease leaves the constitution in a state of perfect security from the infection of the small-pox, may we not infer that a mode of inoculation may be introduced preferable to that at present adopted, especially among those families, which, from previous circumstances. we may judge to be predisposed to have the disease unfavorably? It is an excess in the number of pustules which we chiefly dread in the small-pox; but, in the cow-pox, no pustules appear, nor does it seem possible for the contagious matter to produce the disease from effluvia, or by other means than contact, and that probably not simply between the virus and the cuticle, so that a single individual in a family might at any time receive it without the risk of infecting the rest, or of spreading a distemper that fills a country with terror. Several instances have come under my observation which justify the assertion that the disease cannot be propagated by effluvia. The first boy whom I inoculated with the matter of cow-pox slept in a bed, while the experiment was going forward, with two children who never had gone either through that disease or the small-pox without infecting either of them.

A young woman who had the cow-pox to a great extent, several sores which maturated having appeared on the hands and wrists, slept in the same bed with a fellow dairy maid who never had been infected with either the cow-pox or the small-pox, but no indisposition followed.

Another instance has occurred of a young woman on whose hands were several large suppurations from the cow-pox, who was at the same time a daily nurse to an infant, but the complaint was not communicated to the child

In some other points of view the inoculation of this disease appears preferable to the variolous inoculation.

In constitutions predisposed to scrofula how frequently we see the inoculated small-pox rouse into activity that distressful malady. This circumstance does not seem to depend on the manner in which the distemper has shown itself, for it has as frequently happened among those who have had it mildly as when it appeared in the contrary way.

There are many who, from some peculiarity in the habit, resist the common effects of variolous matter inserted into the skin, and who are in consequence haunted through life with the distressing idea of being insecure from subsequent infection. A ready mode of dissipating anxiety originating from such a cause must now appear obvious. And, as we have seen that the constitution may at any time be made to feel the febrile attack of cow-pox, might it not, in many chronic diseases, be introduced into the system, with the probability of affording relief upon well known physiological principles?*

Although I say the system may at any time be made to feel the febrile attack of cow-pox, yet I have a single instance before me where the virus acted locally only, but it is not in the least probable that the same person would resist the action both of the cow-pox virus and the variolous.

Elizabeth Sarsenet lived as a dairy maid at Newpark farm, in this parish. All the cows and the servants employed in milking had the cow-pox, but this woman, though she had several sores upon her fingers, felt no tumors in the axilla, nor any general indisposition. On being afterwards casually exposed to variolous infection she had the small-pox in a mild way.†

Hannah Pick, another of the dairy maids, who was a fellow servant with Elizabeth Sarsenet, when the distemper broke out at the farm, was at the same time infected, but this young woman had not only sores upon her hands, but felt herself also much indisposed for a day or two. After this, I made several attempts to give her the small-pox by inoculation, but they all proved fruitless. From the former case, then, we see that the animal economy is subject to the same laws in one disease as the other.

The following case, which has very lately occurred, renders it highly probable that not only the heels of the horse, but other parts of the body of that animal, are capable of generating the virus which produces the cow-pox.

*Inoculation in a common way upon the arm will seldom produce this effect. When the disease takes place among the dairy people, the virus comes in contact with pre-existing sores, which does not fail to produce an irritation that affects the system generally.

†This will be more satisfactorily explained in the sequel.

An extensive inflammation of the erysipelatous kind appeared without any apparent ause upon the upper part of the thigh of a sucking colt, the property of Mr. Millet, a rmer at Rockhampton, a village near Berkeley. The inflammation continued several eeks, and at length terminated in the formation of three or four small abscesses. The flamed parts were fomented and dressings were applied by some of the same persons ho were employed in milking the cows. The number of cows milked was twenty-four, d the whole of them had the cow-pox. The milkers, consisting of the farmer's wife, a an and a maid servant, were infected by the cows. The man servant had previously ne through the small-pox, and felt but little of the cow-pox. The servant maid had me years before been infected with the cow-pox, and she also felt it now in a slight gree. But the farmer's wife, who never had gone through either of these diseases, t its effects very severely.

That the disease produced upon the cows by the colt, and from thence conveyed to ose who milked them, was the true and not the spurious cow-pox there can be arcely any room for suspicion; yet it would have been completely satisfactory had e effects of variolous matter been ascertained on the farmer's wife, but there was a culiarity in her situation which prevented my making the experiment.

Thus far have I proceeded in an enquiry, founded, as it must appear, on the basis of periment, in which, however, conjecture has been occasionally admitted, in order to esent to persons well situated for such discussions, objects for a more minute investi- ion. In the meantime, I shall myself continue to prosecute this inquiry, encour- d by the pleasing hope of its becoming essentially beneficial to mankind.

FURTHER

OBSERVATIONS

— ON THE —

VARIOLÆ VACCINÆ.

ADVERTISEMENT.

The foregoing pages contain the whole of my first treatise on the "Variolæ Vaccinæ," published in June, 1798. The importance of the inquiry to the whole human race naturally excited universal attention. Ingenuity and industry were set in motion, but as physiological discussions are ever liable to error, from the complicated nature of their character, I soon clearly perceived that this theory, so beneficial to mankind, was liable to fall into disrepute, and to be wholly discredited by the hasty conclusions unfounded on experiment.

To guard the public mind from prejudice, and to enforce the necessity of a scrupulous precaution in the conduct of inoculation with vaccine matter, I was induced to offer to the world "Further Observations" on the disease, which were published in the beginning of the year 1799. These treatises I have here combined, together with some additions which the continuance of the enquiry has enabled me to submit to the public.

FURTHER OBSERVATIONS, &C., &C.

Though it has not been in my power to extend the inquiry into the causes and effects of the Variolæ Vaccinæ much beyond its original limits, yet, perceiving that it is being to excite a general spirit of investigation, I think it of importance, without delay, to communicate such facts as have since occurred, and to point out the fallacious appearances from whence a disease resembling the true variolæ vaccinæ might arise, with the method of preventing those who may inoculate from producing a spurious disease; and, further, to enforce the precaution suggested in the former treatise on the subject, of suffering the inoculated pustule as soon as it has sufficiently produced its influence on the constitution. From a want of due discrimination of the real existence of the disease, either in the brute or in the human subject, and also of that stage of it in which it is capable of producing the change in the animal economy, which renders it unsusceptible of the contagion of the small-pox, unpleasant consequences might ensue, the source of which, perhaps, might not be suspected by one inexperienced in conducting such experiments.

A late publication contains a relation of most of the facts which had come under my inspection at the time it was written, interspersed with some conjectural observations. Since then, Dr. G. Pearson has established an inquiry into the validity of my principal assertion, the result of which cannot but be highly flattering to my feelings. It contains not a single case which I think can be called an exception to the fact I was originally impressed with—that the cow-pox protects the human body from the small-pox. I have myself received some further confirmations, which shall be subjoined. I have lately also been favored with a letter from a gentleman of great respectability (Ingenhousz) informing me that, on making an inquiry into the subject in the county of Wilts, he discovered that a farmer near Calne had been infected with the small-pox after having had the cow-pox, and that the disease in each instance was so strongly characterized as to render the facts incontrovertible. The cow-pox, it seems, from the farmer's information, was communicated to the farmer from his cows, at the time that they have out an offensive stench from their udders.

Some other instances have likewise been represented to me of the appearance of the disease, apparently marked with its characteristic symptoms, and yet that the patients have afterwards had the small-pox. On these cases I shall, for the present, suspend any particular remarks, but hope that the general observations I have to offer in the sequel will prove of sufficient weight to render the idea of their ever having had existence but as cases of spurious cow-pox extremely doubtful.

Ere I proceed, let me be permitted to observe that truth, in this and every other physiological inquiry that has occupied my attention, has ever been the object of my pursuit; and should it appear in the present instance that I have been led into error, fond as I may appear of the offspring of my labors, I had rather see it perish at once than exist and do a public injury.

I shall proceed to enumerate the sources, or what appear to me as such, of a spurious cow-pox:

Firstly.—That arising from pustules on the nipples or udder of the cow, which pustules contain no specific virus.

Secondly.—From matter, although originally possessing the specific virus, which has suffered a decomposition, either from putrefaction or from any other cause less obvious to the senses.

Thirdly.—From matter taken from an ulcer in an advanced stage, which ulcer arose from a true cow-pock.

Fourthly.—From matter produced on the human skin from contact with some peculiar morbid matter generated by a horse.

On these subjects I shall offer some comments. First—To what length pustulous diseases of the udder and nipples of the cow may extend, it is not in my power to determine; but certain it is that these parts of the animal are subject to some variety of maladies of this nature; and as many of these eruptions, propably all of them, are capable of giving a disease to the human body, would it not be discreet for those engaged in this investigation to suspend controversy and cavil until they can ascertain with precision what is and what is not the genuine cow pox?

For example, a farmer who is not conversant with any of these maladies, but who may have heard of the cow-pox in general terms, may acquaint a neighboring surgeon that the distemper appears at his farm. The surgeon, eager to make an experiment takes away matter, inoculates, produces a sore, uneasiness in the axilla, and perhaps some affection of the system. This is a way in which a fallacious idea of security, both in the mind of the inoculator and the patient, may arise, for a disease may thus have been propagated from a simple eruption only.

One of the first objects, then, of this pursuit, as I have observed, should be to learn how to distinguish with accuracy between that peculiar pustule which is the true cow-pock, and that which is spurious. Until experience has determined this, we view our object through a mist. Let us, for instance, suppose that the small-pox and the chicken-pox were at the same time to spread among the inhabitants of a country which had never been visited by either of these distempers, and where they were quite unknown before. What confusion would arise! The resemblance between the symptoms of the eruptive fever, and between the pustules, in either case would be so striking that a patient who had gone through the chicken-pox to any extent would feel equally easy with regard to his future security from the small-pox, as the person who had actually passed through that disease. Time and future observation would draw the line of distinction.

So, I presume, it will be with the cow-pox, until it is more generally understood. All cavilling, therefore, on the mere report of those who tell us they have had this disease, and are afterwards found to be susceptible of the small-pox, should be suspended.

To illustrate this, I beg leave to give the following history:

Sarah Merlin, of the parish of Easington, in this county, when about thirteen or fourteen years of age, lived as a servant with farmer Clarke, who kept a dairy, consisting of about eighteen cows, at Stonehouse, a neighboring village. The nipples and udders of three of the cows were extensively affected with large white blisters. These cows the girl milked daily, and, at the same time, she assisted, with two others, in milking the rest of the herd.. It soon appeared that the disease was communicated to the girl. The rest of the cows escaped the infection, although they were milked several days after the three above specified had these eruptions on their nipples and udders, and even after the girl's hand became sore. The two others who were engaged in milking, although they milked the cows indiscriminately, received no injury. On the fingers of each of the girl's hands there appeared several large white blisters, she supposes about three or four on each finger. The hands and arms inflamed and swelled, but no constitutional indisposition followed. The sores were anointed with some domestic ointment, and got well without ulcerating.

As this malady was called the cow-pox, and recorded as such in the mind of the patient, she became regardless of the small-pox; but, on being exposed to it some years afterwards, she was infected, and had a full burthen.

Now, had any one conversant with the habits of the disease heard this history, they would have had no hesitation in pronouncing it a case of spurious cow-pox; considering its deviation in the numerous blisters which appeared on the girl's hands; their termination without ulceration; its not proving more generally contagious at the farm, either among the cattle or those employed in milking; and considering also that the patient felt no general indisposition, although there was so great a number of vessicles.

This is perhaps the most deceptious form in which an eruptive disease can be communicated from the cow, and it certainly requires some attention in discriminating it. The most perfect criterion by which the judgment may be guided, is, perhaps, that adopted by those who attend infected cattle. These white blisters on the nipples, they say, never eat into the fleshy parts like those which are commonly of a bluish cast, and which constitute the true cow-pox, but that they affect the skin only, quickly end in scabs, and are not nearly so infectious.

That which appeared to me as one cause of spurious eruptions, I have already remarked in a former treatise, namely, the transition that the cow makes in the spring from a poor to a nutritious diet, and from the udders becoming at this time more vascular than usual for the supply of milk. But there is another source of inflammation and pustules, which I believe is not uncommon in all the dairy counties in the west of England. A cow intended to be exposed for sale, having naturally a small udder, is previously, for a day or two, neither milked artificially nor is her calf suffered to have access to her. Thus the milk is preternaturally accumulated, and the udder and nipples become greatly distended. The consequences frequently are inflammations and eruptions, which maturate.

Whether a disease generated in this way has the power of affecting the constitution in any peculiar manner, I cannot presume positively to determine. It has been conjectured to have been a cause of the true cow-pox, though my inquiries have not led me to adopt this supposition in any one instance. On the contrary, I have known the milkers affected by it, but always found that an affection thus induced left the system as susceptible of the small-pox as before.

What is advanced in my second position, I consider also of very great importance, and could wish it to be strongly impressed on the minds of all who may be disposed to conclude hastily on my observations, whether engaged in their investigation by experiments or not. To place this in its clearest point of view (as the similarity between the action of the small-pox and the cow-pox matter is so obvious), it will be necessary to consider what we sometimes observe to take place in inoculation for the small-pox when imperfect variolous matter is made use of. The concise history on this subject that was brought forward respecting what I had observed in this neighborhood,* I perceive by reference since made to the Memoirs of the Medical Society of London, may be considered as no more than a corroboration of the facts very clearly detailed by Mr. Kite.† To this copious evidence I have to add still more in the following communications from Mr. Earle, surgeon, of Frampton-upon-Severn, in this county, which I deem the more valuable, as he has, with much candor, permitted me to make them public:

"*Sir*—I have read with satisfaction your late publication on the Variolæ Vaccinæ, and being, among many other curious circumstances, particularly struck with that relating to the inefficacy of small-pox matter in a particular state, I think it proper to lay before you the following facts, which came within my own knowledge, and which certainly tend to strengthen the opinions advanced in pages 51 and 52 of your treatise.

"In March, 1784, a general inoculation took place at Arlingham, in this county. I inoculated several patients with active variolous matter, all of whom had the disease in a favorable way; but my matter being all used, and not being able to procure any more in the state I wished, I was under the necessity of taking it from a pustule which, experience has since proved, was advanced too far to answer the purpose I intended. Of the persons inoculated with this last matter, four took the small-pox afterwards in the natural way; one of whom died, three recovered, and the other, being cautioned by me to avoid as much as possible the chance of catching it, escaped from the disease through life. He died of another disorder about two years ago.

"Although one of these cases ended unfortunate, yet I cannot suppose that any medical man will think me careless or inattentive in their management; for I conceive the appearances were such as might have induced any one to suppose that the persons were perfectly safe from future infection. Inflammation in every case took place in the arm, and fever came on with a considerable degree of pain in the axilla. In some of their arms the inflammation and suppuration were more violent than is commonly observed

*An inquiry into the causes and effects of the Variolæ Vaccinæ.

†See an account of some anomalous appearances subsequent to the inoculation of the small-pox, by Charles Kite, surgeon, of Gravesend, in the memoirs of the Medical Society of London. Vol. IV., page 114.

when perfect matter is made use of; in one there was an ulcer which cast off several large sloughs About the ninth day eruptions appeared, which died away earlier than common without maturation. From these circumstances I should suppose that no medical practitioner would scarcely have entertained a doubt that these patients had been infected with a true small-pox; yet I must confess that some small degree of doubt presented itself to me at the speedy disappearance of the eruptions; and in order, as far as I could, to ascertain their safety, I sent one of them to a much older practitioner than myself. This gentleman, on hearing the circumstance of the case, pronounced the patient perfectly secure from future infection.

"The following facts are also a striking proof of the truth of your observations on this subject:

"In the year 1789 I inoculated three children of Mr. Coaley, of Hurst-farm, in this county. The arms inflamed properly, fever and pain in the axilla came on precisely the same as in the former cases, and in ten days eruptions appeared, which disappeared in the course of two days I must observe that the matter here made use of was procured for me by a friend, but no doubt it was in an improper state; for, from the similarity of these cases to those which happened at Arlingham five years before, I was somewhat alarmed for their safety, and desired to inoculate them again; which being permitted, I was particularly careful to procure matter in its most perfect state. All the children took the small-pox from this second inoculation, and all had a very full burthen. These facts I conceive strikingly corroborate your opinion relative to the different states of matter; for in both the instances that I have mentioned it was capable of producing something strongly resembling the true small-pox, although it afterwards proved not to be so

"As I think the communication of these cases is a duty I owe to the public, you are at liberty to make what use you please of this letter. I remain, etc.,

JOHN EARLE."

Frampton-upon-Severn, Gloucestershire, November 10, 1798.

"P. S.—I think it necessary to observe, that I can pronounce with the greatest certainty, that the matter with which the Arlingham patients were inoculated was taken from a true small-pox pustule. I took it myself from a subject that had a very full burthen."

Certain then it is that variolous matter may undergo such a change from the putrefactive process, as well as from some of the more obscure and latent processes of nature, as will render it incapable of giving the small-pox in such a manner as to secure the human constitution from future infection, although we see at the same time it is capable of exciting a disease which bears so strong a resemblance to it as to produce inflammation and matter in the incised skin (frequently, indeed, more violent than when it produces its effects perfectly), swelling of the axillary glands, general indisposition and eruptions. So strongly persuaded was the gentleman, whose practice I have mentioned in page 51 of the late Treatise, that he could produce a mild small-pox by his mode of managing the matter, that he spoke of it as a useful discovery, until convinced of his error by the fatal consequence which ensued.

After this ought we to be in the smallest degree surprised to find, among a great number of individuals, who, by living in dairies, have been casually exposed to the cow-pox virus, when in a state analogous to that of the small-pox above described, some who may have had the disease so imperfectly as not to render them secure from variolous attacks? For the matter, when burst from the pustules on the nipples of the cow, by being exposed, from its lodgment there, to the heat of an inflamed surface, and from being, at the same time, in a situation to be occasionally moistened with milk, is often likely to be in a state conducive to putrefaction; and thus, under some modification of decomposition, it must, of course, sometimes find access to the hand of the milker in such a way as to infect him. What confusion should we have were there no other mode of inoculating the small-pox than such as would happen from handling the diseased skin of a person laboring under that distemper in some of its advanced and loathsome stages! It must be observed that every case of small-pox in the human species, whether communicated by design or otherwise, is to be considered as a case of inoculation. And here I may be allowed to make an observation on the case of the farmer, communicated to me by Dr. Ingenhousz. That he was exposed to the matter when it had undergone the putrefactive change, it is highly probable, from the doctor's observing that the sick cows at the farm gave out an offensive stench from the udders. However, I must remark, that it is unusual for cattle to suffer to such an extent, when disordered with the cow-pox, so as to make a by-stander sensible of any ill smell. I have often stood among a herd which had the distemper, without being conscious of its presence from any particular effluvia. Indeed, in this neighborhood it commonly receives an early check from escharotic applications of the cow leech. It has been conceived to be contagious among cows without contact; but this idea cannot be well-founded, because the cattle in one meadow do not affect those in another (although

here may be no other partition than a hedge), unless they be handled or milked by hose who bring the infectious matter with them; and, of course, the smallest particle maginable, when applied to a part susceptible of its influence, may produce the effect. mong the human species it appears to be very clear that the disease is produced by ontact only. All my attempts, at least, to communicate it by effluvia have hitherto roved ineffectual.

As well as the perfect change from that state in which variolous matter is capable of roducing full and decisive effects on the constitution, to that wherein its specific propties are entirely lost, it may reasonably be supposed that it is capable of undergoing a ariety of intermediate changes. The following singular occurrences in ten cases of inculation, obligingly communicated to me by Mr. Trye, senior surgeon to the infirmary at loucester, seem to indicate that the variolous matter, previously to its being taken rom the patient for the intended purpose, was beginning to part with some of its origal properties; or, in other words, that it had suffered a partial decomposition. Mr. rye says: "I inoculated ten children with matter taken at one time and from the me subject. I observed no peculiarity in any of them previously to their inoculation, r did anything remarkable appear in their arms till after the decline of the disease. wo infants of three months old had erysipelas about the incisions, in one of them exnding from the shoulders to the finger's ends. Another infant had abscesses in the ellular substance in the neighborhood of the incisions, and five or six of the rest had xillary abscesses. The matter was taken from the distinct small-pox late in its proess, and when some pustules had been dried. It was received upon glass, and slowly ied by the fire. All the children had pustules which maturated, so that I suppose em all secure from future infection; at least, as secure as any others whom I have er inoculated. My practice never afforded a sore arm before."

In regard to my former observation on the improper and dangerous mode of preserving riolous matter, I shall here remark that it seems not to have been clearly understood. nding that it has been confounded with the more eligible modes of preservation, I will plain myself further. When the matter is taken from a fit pustule, and properly prered for preservation, it may certainly be kept without losing its specific properties a eat length of time; for instance, when it is previously dried in the open air on some mpact body, as a quill or a piece of glass, and afterwards secured in a small vial.* ut when kept several days in a state of moisture, and during that time exposed to a arm temperature, I do not think it can be relied upon as capable of giving a perfect ease, although, as I have before observed, the progress of the symptoms arising from e action of the imperfect matter bear so strong a resemblance to the small-pox when cited completely.

Thirdly—That the first formed virus, or what constitutes the true cow-pock pustule, riably possesses the power I have ascribed to it, namely, that of affecting the contution with a specific disease, is a truth that no subsequent occurrence has yet led me doubt. But as I am now endeavoring to guard the public as much as possible against roneous conclusions, I shall observe that when this pustule has degenerated into an er (to which state it is sometimes disposed to pass, unless timely checked), I suspect t matter possessing very different properties may sooner or later be produced, and, hough it may have passed that stage wherein the specific properties of the matter reted are no longer present in it, yet, when applied to a sore (as in the casual way), night dispose that sore to ulcerate, and from its irritation the system would probly become affected; and thus, by assuming some of its strongest characters, it would tate the genuine cow-pox

From the preceding observations on the matter of small-pox when decomposed, it must, onceive, be admitted that cow-pox matter in the state now described may produce a ease, the effects of which may be felt both locally and generally, yet that the disease s induced may not be effectual in obviating the future effects of variolous contagion. he case of Mary Miller, related by Mr. Kite in the volume above alluded to, it aprs that the inflammation and suppuration of the inoculated arm were more than ally severe, although the system underwent no specific change from the action of the us; which appears from the patient's sickening seven weeks afterwards with the ural small-pox, which went through its course. Some of the cases communicated by Earle tend further to confirm this fact, as the matter there manifestly produced ulation on the inoculated part to a considerable extent.

Fourthly.—Whether the cow-pox is a spontaneous disease in the cow, or is to be attrib-l to matter conveyed to the animal, as I have conceived, from the horse, is a question ch, though I shall not attempt now fully to discuss, yet I shall digress so far as to nce some further observations, and to give my reasons more at large for taking up an nion that to some has appeared fanciful. The aggregate of these observations,

* virus prepared the cow-pox virus was perfectly active, and possessing all its specific properties, at the of three months.

though not amounting to positive proof, forms presumptive evidence of so forcible a kind, that I imagine it might on any other person have made the same impression it did on me, without fixing the imputation of credulity.

Firstly.—I conceived this was its source, from observing that where the cow-pox had appeared among the dairies here (unless it could be traced to the introduction of an infected cow or servant), it had been preceded at the farm by a horse diseased in the manner already described, which horse had been attended by some of the milkers.

Secondly.—From its being a popular opinion throughout this great dairy country, and from its being insisted on by those who here attend sick cattle.

Thirdly.—From the total absence of the disease in those countries where the men servants are not employed in the dairies.*

Fourthly.—From having observed that morbid matter generated by the horse frequently communicates, in a casual way, a disease to the human subject so like the cow-pox that in many cases it would be difficult to make the distinction between one and the other.†

Fifthly.—From being induced to suppose from experiments that some of those who had been thus affected from the horse resisted the small-pox.

Sixthly.—From the progress and general appearance of the pustule on the arm of the boy whom I inoculated with matter taken from the hand of a a man infected by a horse; and from the similarity to the cow-pox of the general constitutional symptoms which followed.‡

I fear it would be trespassing too far to adduce the general testimony of our farmers in support of this opinion; yet I beg leave to introduce an extract from a letter on this subject from the Rev Mr. Moore, of Chalford Hill, in this county:

"In the month of November, 1797, my horse had diseased heels, which was certainly what is termed the grease; and at a short subsequent period my cow was also affected with what a neighboring farmer (who was conversant with the complaints of cattle), pronounced to be the cow-pox, which he, at the same time, observed my servant would be infected with; and this proved to be the case, for he had eruptions on his hands, face and many parts of the body, the pustules appearing large, and not much unlike the small-pox, for which he had been inoculated a year and a half before, and had then a very heavy burthen. The pustules on the face might arise from contact with his hands, as he had a habit of rubbing his forehead, where the sores were the largest and thickest.

"The boy associated with the farmer's sons during the continuance of the disease, neither of whom had had the small-pox, but they felt no ill effects whatever. He was not much indisposed, as the disease did not prevent him from following his occupations as usual. No other person attended the horse or milked the cow but the lad above mentioned. I am firmly of opinion that the disease in the heels of the horse, which was a virulent grease, was the origin of the servant's and the cow's malady."

But to return to the more immediate object of this proposition:

From the similarity of symptoms, both constitutional and local, between the cow-pox and the disease received from morbid matter generated by a horse, the common people in this neighborhood, when infected with this disease, through a strange perversion of terms, frequently called the cow-pox. Let us suppose, then, such a malady to appear among some of the servants at the farm, and at the same time that the cow-pox were to break out among the cattle; and let us suppose, too, that some of the servants were infected in this way, and that others received the infection from the cows. It would be recorded at the farm, and among the servants themselves, wherever they might afterwards be dispersed, that they had all had the cow-pox. But it is clear that an individual thus infected from the horse, would neither be for a certainty secure himself, nor would he impart security to others were they inoculated by virus thus generated. He still would be in danger of taking the small-pox. Yet were this to happen before the nature of the cow-pox be more maturely considered by the public, my evidence on the subject might be depreciated unjustly. For an exemplification of what is here advanced relative to the nature of the infection when received directly from the horse, see "Inquiry into the Causes and Effects of the Variolæ Vaccinæ," pages 25, 26, 27, 28 and page 33; and by way of further example, I beg leave to subjoin the following intelligence received from Mr. Fewster, surgeon, of Thornbury, in this county, a gentleman perfectly well acquainted with the appearances of the cow-pox on the human subject.

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*This information was communicated to me from the first authorities.

†The sound skin does not appear to be susceptible of this virus when inserted into it, but when previously diseased from little accidents its effects are often conspicuous. See plate No. 2.

‡This case (on which I laid no inconsiderable stress in my late treatise, as presumptive evidence of the fact adduced) seems to have been either mistaken or overlooked by those who have commented upon the subject.—See case XVIII, page 33. The boy unfortunately died of a fever at a parish work house before I had an opportunity of observing what effects would have been produced by the matter of small-pox. The experiments published by Mr. Simmons, of Manchester, and others, on the subject, with the view of refuting this theory, appear to have but little weight, as even the cow-pox virus itself, when repeatedly introduced into the sound nipples of cows by means of a lancet, was found to produce no effect.

William Morris, aged thirty-two, servant to Mr. Cox, of Almonsbury, in this county, plied to me on the second of April, 1798. He told me that four days before he found a ffness and swelling in both hands, which were so painful it was with difficulty he ntinued his work; that he had been seized with pain in his head, small of the back, l limbs, and with frequent chilly fits succeeded by fever. On examination I found n still affected with these symptoms, and that there was a great prostration of ength. Many parts of his hands on the inside were chapped, and on the middle joint the thumb of the right hand there was a small phagedenic ulcer, about the size of a ge pea, discharging an ichorous fluid. On the middle finger of the same hand there s another ulcer of a similar kind. These sores were of a circular form, and he described their first appearance as being somewhat like blisters arising from a burn. He plained of excessive pain, which extended up his arm into the axilla. These symptns and appearances of the sores were so exactly like the cow-pox, that I pronounced had taken the distemper from milking cows. He assured me he had not milked a cow more than half a year, and that his master's cows had nothing the matter with them. hen asked him if his master had a greasy horse? which he answered in the affirmae, and further said that he had constantly dressed him twice a day for the last three eks or more, and remarked that the smell of his hands was much like that of the rse's heels. On the fifth of April I again saw him, and found him still complaining of m in both his hands, nor were his febrile symptoms at all relieved. The ulcers had w spread to the size of a seven shilling gold coin, and another ulcer, which I had not iced before, appeared on the first joint of the forefinger of the left hand, equally pain- with that on the right. I ordered him to bathe his hands in warm bran and water, plied escharotics to the ulcers, and wrapped his hands up in a soft cataplasm. The t day he was much relieved, and in something more than a fortnight got well. He his nails from the thumb and fingers that were ulcerated."

The sudden disappearance of the symptoms in this case, after the application of the narotics to the sores, is worthy of observation. It seems to show that they were t up by the irritation of the ulcers.

The general symptoms which I have already described of the cow-pox, when communated in a casual way to any great extent, will, I am convinced, from the many cases ave seen, be found accurate; but from the very slight indisposition which ensues in es of inoculation, where the pustule, after affecting the constitution, quickly runs o a scab spontaneously, or is artificially suppressed by some proper application, I am nced to believe that the violence of the symptoms may be ascribed to the inflammaon and irritation of the ulcers (when ulceration takes place to any extent, as in the nal small-pox), and that the constitutional symptoms which appear during the sence of the sore, while it assumes the character of a pustule only, are felt but in a trifling degree. This mild affection of the system happens when the disease makes a slight local impression on those who have been accidentally infected by cows; , as far as I have seen, it has uniformly happened among those who have been inocud, when a pustule only, and no great degree of inflammation or any ulceration, has en place from the inoculation. The following cases will strengthen this opinion:

The cow-pox appeared at a farm in the village of Stonehouse, in this county, about Michaelmas last, and continued gradually to pass from one cow to another till the end November. On the twenty-sixth of that month some ichorous matter was taken from w, and dried upon a quill. On the second of December some of it was inserted into a scratch, made so superficial that no blood appeared, on the arm of Susan Phipps, a l seven years old. The common inflammatory appearances took place in consece, and advanced till the fifth day, when they had so much subsided that I did not ceive anything further would ensue.

Sixth.—Appearances stationary.

Seventh.—The inflammation began to advance.

Eighth.—A vesication perceptible on the edges, forming, as in the inoculated small- an appearance not unlike a grain of wheat, with the cleft or indention in the centre. nth.—Pain in the axilla.

Tenth.—A little headache; pulse 110; tongue not discolored; countenance in health.

Eleventh.—No perceptible illness; pulse about 100.

Thirteenth.—The pustule was now surrounded by an efflorescence, interspersed with minute confluent pustules, to the extent of about an inch. Some of these pustules anced in size and maturated. So exact was the resemblance of the arm at this stage the general appearance of the inoculated small-pox, that Mr. D., a neighboring surs, who took some matter from it, and who had never seen the cow-pox before, d he could not perceive any difference.* The child's arm now showed a disposition

*That the cow-pox was the supposed guardian of the constitution from the action of the small-pox has been a prevalent idea for a long time past, but the similarity in the constitutional effects between one disease and the other could never have been so accurately observed had not the inoculation of the cow-pox placed it in a new and stronger point of view. This practice, too, has shown us what before lay concealed. The rise and progress of the pustule formed by the insertion of the virus, which places in a most conspicuous light its striking resemblance to the pustule from the inoculated small-pox.

to scab, and remained stationary for two or three days, when it began to run into an ulcerous state; and then commenced a febrile disposition, accompanied with an increase of axillary tumor. The ulcer continued spreading near a week, during which time the child continued ill, when it increased to a size nearly as large as a shilling. It began now to discharge pus; granulations sprung up, and it healed. This child had before been of a remarkably sickly constitution, but is now in very high health.

Mary Hearn, twelve years of age, was inoculated with matter taken from the arm of Susan Phipps.

Sixth day.—A pustule beginning to appear, slight pain in the axilla.

Seventh.—A distinct vesicle formed.

Eighth.—The vesicle increasing; edges very red; no deviation at this time from the inoculated small-pox.

Ninth.—No indisposition; pustule advancing.

Tenth.—The patient felt this evening a slight febrile attack.

Eleventh.—Free from indisposition.

Twelfth—Thirteenth.—The same.

Fourteenth.—An efflorescence of a faint red color, extending several inches around the arm. The pustule beginning to show a disposition to spread, was dressed with an ointment composed of *hydrarg. nit. rub. & ung ceræ.* The efflorescence itself was covered with a plaster of *ung hydr. fort.* In six hours it was examined, when it was found that the efflorescence had totally disappeared. The application of the ointment with the *hydr. nit. rub.* was made use of for three days, when the state of the pustule remaining stationary, it was exchanged for the *ung. hydr. nit.* This appeared to have a more active effect than the former, and in two or three hours the virus seemed to be subdued, when a simple dressing was made use of; but the sore again showing a disposition to inflame, the *ung. hydr. nit.* was again applied, and soon answered the intended purpose effectually. The girl, after the tenth day, when, as has been observed, she became a little ill, showed not the least symptom of indisposition. She was afterwards exposed to the action of variolous matter, and completely resisted it. Susan Phipps also went through a similar trial.

Conceiving these cases to be important, I have given them in detail; first, to urge the precaution of using such means as may stop the progress of the pustule; and secondly, to point out, what appears to be the fact, that the most material indisposition, or at least that which is felt most sensibly, *does not arise primarily from the first action of the virus on the constitution, but that it often comes on, if the pustule is left to chance, as a secondary disease.* This leads me to conjecture, what experiment must finally determine, that they who have had the small-pox are not afterwards susceptible of the primary action of the cow-pox virus; for, seeing that the simple virus itself, when it has not passed beyond the boundary of a vesicle, excites in the system so little commotion, is it not probable the trifling illness thus induced may be lost in that which so quickly, and often times so severely, follows in the casual cow-pox from the presence of corroding ulcers? This consideration induces me to suppose that I may have been mistaken in my former observation on this subject.

In this respect, as well as many others, a parallel may be drawn between this disease and the small-pox. In the latter, the patient first feels the effect of what is called the absorption of the virus. The symptoms then often nearly retire, when a fresh attack commences, different from the first, and the illness keeps pace with the progress of the pustules through their different stages of maturation, ulceration, etc.

Although the application I have mentioned in the case of Mary Hearn proved sufficient to check the progress of ulceration, and prevent any secondary symptoms, yet, after the pustule has duly exerted its influence, I should prefer the destroying it quickly and effectually to any other mode. The term caustic to a tender ear (and I conceive none will feel more interested in this inquiry than the anxious guardians of a nursery), may sound harsh and unpleasing, but every solicitude that may arise on this account will no longer exist, when it is understood that the pustule in a state fit to be acted upon is then quite superficial, and that it does not occupy the space of a silver penny.*

As a proof of the efficacy of this practice, even before the virus had fully exerted itself on the system, I shall lay before my reader the following history:

By a reference to the treatise on the Variolæ Vaccinæ, it will be seen that in the month of April, 1798, four children were inoculated with the matter of cow-pox; and that in two of these cases the virus on the arm was destroyed soon after it had produced a perceptible sickening.

Mary James, aged seven years, one of the children alluded to, was inoculated in the month of December following with fresh variolous matter, and at the same time was exposed to the efflavia of a patient affected with the small-pox. The appearance and

*I mention escharotics for stopping the progress of the pustule, because I am acquainted with their efficacy. Probably more simple means might answer the purpose quite as well, such as might be found among the mineral and vegetable astringents.

gress of the infected arm was, in every respect, similar to that which we generally erve when variolous matter has been inserted into the skin of a person who has not viously undergone either the cow-pox or the small-pox. On the eighth day, conceiv- there was infection in it, she was removed from her residence among those who had had the small-pox. I was now anxiously waiting the result conceiving from the e of the girl's arm she would fall sick about this time. On visiting her on the even- of the following day (the ninth), all I could learn from the woman who attended was that she felt somewhat hotter than usual during the night, but was not restless, that in the morning there was the faint appearance of a rash around her wrists. went off in a few hours, and was not at all perceptible to me on my visit in the ing. Not a single eruption appeared, the skin having been repeatedly and fully examined. The inoculated arm continued to make the usual progress to the through all the stages of inflammation, maturation and scabbing.

the eighth day matter was taken from the arm of this girl (Mary James), and in- ed into the arms of her mother and brother, (neither of whom had had either the l-pox or the cow-pox), the former about fifty years of age, the latter six.

the eighth day after the insertion, the boy felt indisposed, and continued unwell days, when a measles-like rash appeared on his hands and wrists, and was thinly ered over his arms. The day following his body was marbled over with an appear- somewhat similar, but he did not complain, nor did he appear indisposed. A few les now appeared, the greater part of which went away without maturating.

the ninth day the mother began to complain. She was a little chilly, and had a -ache for two days, but no pustule appeared on the skin, nor had she any appearance ash.

e family was attended by an elderly woman as a nurse, who, in her infancy had exposed to the contagion of the small-pox, but had resisted it. This woman was nfected, but had the disease in the slightest manner, a very few eruptions appear- wo or three of which only maturated.

m a solitary instance like that adduced of Mary James, whose constitution appears ve resisted the action of the variolous virus, after the influence of the cow-pox virus been so soon arrested in its progress, no positive conclusion can be fairly drawn; rom the history of the three other patients, who were subsequently infected; but, theless, the facts collectively may be deemed interesting.

at one mild variety of the small-pox has appeared, I have already plainly shown; y the means now mentioned we probably may have it in our power to produce at nother.

he time when the pustule was destroyed in the arm of Mary James, I was informed d been indisposed about twelve hours; but I am now assured by those who were er that the space of time was much less. Be that as it may, in cases of cow-pox ation I would not recommend any application to subdue the action of the pustule, convincing proofs had appeared of the patient's having felt its effects at least hours No harm, indeed, could ensue, were a longer period to elapse before the ation was made use of. In short, it should be suffered to have as full effect as it consistently with the state of the arm.

he cases of inoculation multiply, I am more and more convinced of the extreme ss of the symptoms arising merely from the primary action of the virus on the tution, and that those symptoms which (as in the accidental cow-pox), affect the t with severity, are entirely secondary, excited by the irritating processes of in- tion and ulceration; and it appears to me that this singular virus possesses an ng quality of a peculiar kind; but as a single cow-pox pustule is all that is neces- render the variolous virus ineffectual, and as we possess the means of allaying itation, should any arise, it becomes of little or no consequence.

pears, then, (as far as inference can be drawn from the present progress of cow-pox tion), that it is an accidental circumstance only, which can render this a violent , and a circumstance of that nature which, fortunately, it is in the power of every one to avoid. I allude to the communication of the disease from cows. In e, should the hands of the milker be affected with little accidental sores to any every sore would become the nidus of infection, and feel the influence of the and the degree of violence in the constitutional symptoms would be in proportion number and to the state of these local affections. Hence it follows that a person, y accident or design, might be so filled with these wounds from contact with the hat the constitution might sink under the pressure.

g that we possess the means of rendering the action of the sores mild, which, ft to chance, are capable of producing violent effects; and seeing, too, that these ar a resemblance to the small-pox, especially the confluent, should it not encour- hope that some topical application might be used with advantage to counteract l tendency of that disease, when it appears in this terrific form? At what stage

or stages of the disease this may be done with the most promising expectation of success, I will not pretend now to determine. I only throw out this idea as the basis of further reasoning and experiment

I have often been foiled in my efforts to communicate the cow-pox by inoculation. An inflammation will sometimes succeed the scratch or puncture, and in a few days disappear without producing any further effect. Sometimes it will even produce an ichorous fluid, and yet the system will not be affected.* The same thing, we know, happens with the small-pox virus.

Four or five servants were inoculated at a farm contiguous to this place, last summer, with matter just taken from an infected cow. A little inflammation appeared on all their arms, but died away without producing a pustule; yet all these servants caught the disease within a month afterwards from milking the infected cows, and some of them had it severely. At present, no other mode than that commonly practiced for inoculating the small-pox has been used for giving the cow-pox; but it is probable this might be varied with advantage. We should imitate the casual communication more clearly were we first, by making the smallest superficial incision or puncture on the skin, to produce a little scab, and then, removing it, to touch the abraded part with the virus. A small portion of a thread imbrued in the virus (as in the old method of inoculating the small-pox), and laid upon the slightly incised skin, might probably prove a successful way of giving the disease; or the cutis might be exposed in a minute point by an atom of blistering plaster, and the virus brought in contact with it. In the cases just alluded to, where I did not succeed in giving the disease constitutionally, the experiment was made with matter taken in a purulent state from a pustule on the nipple of a cow.†

Is pure pus, though contained in a small-pox pustule, ever capable of producing the small-pox perfectly? I suspect it is not. Let us consider that it is always preceded by the limpid fluid, which, in constitutions susceptible of variolous contagion, is always infectious; and though, on opening a pustule, its contents may appear perfectly purulent, yet a given quantity of the limpid fluid may at the same time be blended with it though it would be imperceptible to the only test of our senses, the eye. The presence then, of this fluid, or its mechanical diffusion through pus, may at all times render active what is apparently mere pus, while its total absence (as in stale pustules) may be attended with the imperfect effects we have seen.

It would be digressing too widely to go far into the doctrine of secretion, but as it will not be quite extraneous, I shall just observe that I consider both the pus and the limpid fluid of the pustule as secretions, but that the organs established by nature to perform the office of secreting these fluids may differ essentially in their mechanic structure. What but a difference in the organization of glandular bodies constitutes the difference in the qualities of the fluids secreted? From some peculiar derangement in the structure, or, in other words, some deviation in the natural action of a gland destined to secrete a mild, innoxious fluid, a poison of the most deadly nature may be created. For example: That gland, which in its sound state, secretes pure saliva, may, from being thrown into diseased action, produce a poison of the most destructive quality. Nature appears to have no more difficulty in forming minute glands among the vascular parts of the body, than she has in forming blood vessels, and millions of these can be called into existence, when inflammation is excited, in a few hours.‡

In the present early stage of the inquiry, (for early it certainly must be deemed), before we know for an absolute certainty how soon the virus of the cow-pox may suffer change in its specific properties, after it has quitted the limpid state it possessed while forming a pustule, it would be prudent for those who have been inoculated with it to submit to variolous inoculation. No injury or inconvenience can accrue from this, as were the same method practiced among those, who, from inoculation, have felt the small-pox in an unsatisfactory manner at any period of their lives, it might appear that I had not been too officious in offering a cautionary hint, in recommending a second inoculation with matter in its most perfect state.

And here let me suppose, for argument's sake, (not from conviction), that one person in an hundred, after having had the cow-pox should be found susceptible of the small-pox, would this invalidate the utility of the practice? For, waving all other considerations, who will deny that the inoculated small-pox, though abstractedly it may be considered as harmless, does not involve in itself something that in numberless instances proves baneful to the human frame.

That in delicate constitutions it sometimes excites scrofula is a fact that must be generally subscribed to, as it is so obvious to common observation. This consideration is important.

*At this period of the inquiry I had not discovered the importance of inoculating with virus not formed in the pustule. The reader will find this explained as he proceeds.

†The cause of these disappointments will be explained.

‡Mr. Home, in his excellent dissertation on pus and mucus, justifies this assertion.

As the effects of the small-pox inoculation on those who have had the cow-pox, will be watched with the most scrupulous eye by those who prosecute this inquiry, it may be proper to bring to their recollection some facts relative to the small-pox, which I must consider here as of consequence, but which hitherto seem not to have made a due impression.

It should be remembered that the constitution cannot by previous infection be rendered totally unsusceptible of the variolous poison; neither the casual nor the inoculated small-pox, whether it produces the disease in a mild or in a violent way, can perfectly extinguish the susceptibility. The skin, we know, is ever ready to exhibit, though often in a very limited degree, the effects of the poison when inserted there: and how frequently do we see among nurses, when much exposed to the contagion, eruptions, and these sometimes preceded by sensible illness! Yet, should anything like an eruption appear, or the smallest degree of indisposition, upon the insertion of the variolous matter on those who have gone through the cow-pox, my assertions respecting the peculiarities of the disease might be unjustly discredited.

I know a gentleman who, many years ago, was inoculated for the small-pox, but having no pustules or scarcely any constitutional affection that was perceptible, he was dissatisfied, and has since been repeatedly inoculated. A vesicle has always been produced on the arm in consequence, with axillary swelling and a slight indisposition. This is by no means a rare occurrence. It is probable that the fluid thus excited upon the skin would always produce the small-pox.

On the arm of a person who had gone through the cow-pox many years before, I once produced a vesication by the infection of variolous matter, and with a little of the fluid inoculated a young woman, who had a mild, but very efficacious, small-pox in consequence, although no constitutional effect was produced on the patient from whom the matter was taken.

The following communication from Mr. Fewster affords a still clearer elucidation of this fact. Mr. Fewster says:

"On the third of April, 1797, I inoculated Master H———, aged fourteen months, for the small-pox. At the usual time he sickened, had a plentiful eruption, particularly on his face, and got well. His nursemaid, aged twenty-four, had many years before gone through the small-pox in the natural way, which was evident from her being much pitted with it. She had used the child to sleep on her left arm, with her left cheek in contact with his face, and during his inoculation had mostly slept in that manner. About a week after the child got well she (the nurse) desired me to look at her face, which she said was very painful. There was a plentiful eruption on the left cheek, but not on any other part of the body, which went on to maturation.

"On inquiry, I found that three days before the appearance of the eruption she was taken with slight chilly fits, pain in her head and limbs, and some fever. On the appearance of the eruption these pains went off, and now (the second day of the eruption) she complains of a little sore throat. Whether the above symptoms are the effects of the small-pox or a recent cold, I do not know. On the fifth day of the eruption, I charged a lancet from two of the pustules, and on the next day I inoculated two children—one two years, and the other four months old—with the matter. At the same time I inoculated the mother and eldest sister with variolous matter taken from Master H———. On the fifth day of their inoculation all their arms were inflamed alike; and, on the eighth day, the eldest of those inoculated from the nurse sickened, and the youngest on the eleventh. They had both a plentiful eruption, from which I inoculated several others, who had the disease very favorably. The mother and the other child sickened about the same time, and likewise had a plentiful eruption.

"Soon after a man in the village sickened with the small-pox, and had a confluent one. To be convinced that the children had had the disease effectually, I took them to my house, and inoculated them in both arms with matter taken from him, but without effect."

These are not brought forward as uncommon occurrences, but as exemplifications of the human system's susceptibility of the variolous contagion, although it has been previously sensible of its action.

Happy it is for mankind that the appearance of the small-pox a second time on the same person beyond a trivial extent, is so extremely rare that it is looked upon as a phenomenon. Indeed, since the publication of Dr. Heberden's paper on the Varicellæ, or chicken-pox, the idea of such an occurrence, in deference to authority so truly respectable, has been generally relinquished. This, I conceive, has been without just reason; for, as we have seen, among many others, so strong a case as that recorded by Mr. Edward Jesty, surgeon, of Newbury, Berks, in the fourth volume of the memoirs of the Medical Society of London (from which I take the following extracts), no one, I think, will long in doubt the fact:

"Mr. Richard Langford, a farmer of West Shefford, in this county (Berks), about fifty years of age, when about a month old, had the small-pox at a time when three others of the family had the same disease, one of whom—a servant man—died of it. Mr. Langford's countenance was strongly indicative of the malignity of the distemper, his face being so remarkably pitted and seamed, as to attract the notice of all who saw him, so that no one could entertain a doubt of his having had that disease in a most inveterate manner."

Mr. Withers proceeds to state that Mr. Langford was seized a second time, had a bad confluent small-pox, and died on the twenty-first day from the seizure; and that four of the family, as also a sister of the patient's, to whom the disease was conveyed by her son's visiting his uncle, falling down with the small-pox, fully satisfied the country with regard to the nature of the disease, which nothing short of this would have done. The sister died.

"This case was thought so extraordinary a one as to induce the rector of the parish to record the particulars in the parish register."

It is singular that in most cases of this kind the disease in the first instance has been confluent; so that the extent of the ulceration on the skin (as in the cow-pox) is not the process in nature which affords security to the constitution.

As the subject of the small-pox is so interwoven with that which is the more immediate object of my present concern, it must plead my excuse for so often introducing it. At present it must be considered a distemper not well understood. The inquiry I have instituted into the nature of the cow-pox will probably promote its more perfect investigation.

The inquiry of Dr. Pearson into the history of the cow-pox having produced so great a number of attestations in favor of my assertion that it proves a protection to the human body from the small-pox, I have not been assiduous in seeking for more; but as some of my friends have been so good as to communicate the following, I shall conclude these observations with their insertion.

Extract of a letter from Mr. Drake, surgeon, at Stroud, in this county, and late surgeon to the North Gloucester Regiment of Militia:

"In the spring of the year 1796 I inoculated men, women and children, to the amount of about seventy. Many of the men did not receive the infection, although inoculated at least three times, and kept in the same room with those who actually underwent the disease during the whole time occupied by them in passing through it. Being anxious they should in future be secure against it, I was very particular in my inquiries to find out whether they ever had previously had it, or at any time been in the neighborhood of people laboring under it. But, after all, the only satisfactory information I could obtain was that they had had the cow-pox. As I was then ignorant of such a disease affecting the human subject, I flattered myself what they imagined to be the cow-pox was in reality the small-pox in a very slight degree. I mentioned the circumstance in the presence of several of the officers, at the same time expressing my doubts if it were not small-pox, and was not a little surprised when I was told by the colonel that he had frequently heard you mention the cow-pox as a disease endemial to Gloucestershire, and that if a person were ever affected by it, you supposed him afterwards secure from the small-pox. This excited my curiosity, and when I visited Gloucestershire I was very inquisitive concerning the subject; and from the information I have since received, both from your publication and from conversation with medical men of the greatest accuracy in their observations, I am fully convinced that what the men supposed to be the cow-pox, was actually so, and I can safely affirm that they effectually resisted the small-pox."

Mr. Fry, surgeon, at Durfley, in this county, favors me with the following communication:

"During the spring of the year 1797, I inoculated fourteen hundred and seventy-five patients, of all ages, from a fortnight old to seventy years, amongst whom there were many who had previously gone through the cow-pox. The exact number I cannot state, but if I say they were near thirty, I am certainly within the number. There was not a single instance of the variolous matter producing any constitutional effect on these people, nor any greater degree of local inflammation than it would have done in the arm of a person who had before gone through the small-pox, notwithstanding it was invariably inserted four, five, and sometimes six different times, to satisfy the minds of the patients. In the common course of inoculation previous to the general one, scarcely a year passed without my meeting with one or two instances of persons who had gone through the cow-pox, resisting the action of the variolous contagion. I may fairly say that the number of people I have seen inoculated with the small-pox, who at former periods had gone through the cow-pox, are not less than forty;* and in no one instance have I

*The greater part of these people must, of course, have had the cow-pox many years before this trial was made upon them with the matter of small-pox.—E. J.

nown a patient receive the small-pox, notwithstanding they invariably continued to ssociate with other inoculated patients during the progress of the disease, and many of hem purposely exposed themselves to the contagion of the natural small-pox; whence am fully convinced that a person who had fairly had the cow-pox is no longer capable f being acted upon by the variolous matter.

"I also inoculated a very considerable number of those who had had a disease which an through the neighborhood a few years ago, and was called by the common people he swine pox, not one of whom received the small-pox.*

"There were about half a dozen instances of people who never had either the cow or vine pox, yet did not receive the small-pox, the system not being in the least deranged, r the arms inflamed, although they were repeatedly inoculated, and associated with thers who were laboring under the disease. One of them was the son of a farrier."

Mr. Tierny, assistant surgeon of the South Gloucester Regiment of Militia, has obliged e with the following information:

"That in the summer of the year 1798, he inoculated a great number of the men be- nging to the regiment, and that among them he found eleven, who, from having lived dairies, had gone through the cow-pox. That all of them resisted the small-pox, ex- pt one; but that, on making the most rigid and scrupulous inquiry at the farm in loucestershire, where the man said he lived when he had the disease, and among those ith whom at the same time he declared he had associated, and particularly of a person the parish, whom he said had dressed his fingers, it most clearly appeared that he med at an imposition, and that he never had been affected with the cow-pox.†

Mr. Tierney remarks, "that the arms of many who were inoculated, after having had e cow-pox, inflamed very quickly, and that in several a little ichorous fluid was rmed."

Mr. Cline, who in July last was so obliging, at my request, as to try the efficacy of e cow-pox virus, was kind enough to give me a letter on the result of it, from which e following is an extract:

"*My Dear Sir*—The cow-pox experiment has succeeded admirably. The child sick- ed on the seventh day, and the fever, which was moderate, subsided on the eleventh. he inflammation arising from the infection of the virus extended to about four inches diameter, and then gradually subsided, without having been attended with pain or her inconvenience. There were no eruptions.

"I have since inoculated him with small-pox matter in three places, which were ghtly inflamed on the third day, and then subsided.

"Dr. Lister, who was formerly physician to the small-pox hospital, attended the child th me, and he is convinced that it is not possible to give him the small-pox, I think e substituting the cow-pox poison for the small-pox promises to be one of the greatest provements that has ever been made in medicine; and the more I think on the subject, e more I am impressed with its importance.

"With great esteem, I, am, etc.,
HENRY CLINE."

incoln's Inn Fields, August 2, 1798.

From communications, with which I have been favored from Dr. Pearson, who has asionally reported to me the result of his private practice with the vaccine virus in ndon, and from Dr. Woodville, who has also favored me with an account of his more ensive inoculation with the same virus at the small-pox hospital, it appears that ny of their patients have been affected with eruptions, and that these eruptions have tured in a manner very similar to the variolous. The matter they made use of was en, in the first instance, from a cow belonging to one of the great milk farms in Lon- . Having never seen maturated pustules produced either in my own practice among se who were casually infected by cows, or those to whom the disease had been com- nicated by inoculation, I was desirous of seeing the effects of the matter generated London, on subjects living in the country, A thread imbrued in some of this matter sent to me, and with it two children were inoculated, whose cases I shall transcribe n my notes.

tephen Jenner, three years and a-half old.
hird Day—The arm showed a proper and decisive inflammation.
ixth Day—A vesicle arising.
eventh Day—The pustule of a cherry color.
ighth Day—Increasing in elevation. A few spots now appear on each arm, near the rtion of the inferior tendons of the biceps muscles. They are very small and of a

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* his was that mild variety of the small-pox which I have noticed in the late treatise on the cow-pox, 49.

† ne public cannot be too much on their guard respecting persons of this description.

vivid red color. The pulse natural; tongue of its natural hue; no loss of appetite, or any symptom of indisposition.

Ninth Day—Inoculated pustule on the arm this evening began to inflame, and gave the child uneasiness. He cried and pointed to the seat of it, and was immediately afterwards affected with febrile symptoms; at the expiration of two hours after the seizure, a plaster of *ung. hydrarg. fort.* was applied, and its effect was very quickly perceptible, for in ten minutes he assumed his usual looks and playfulness. On examining the arm about three hours after the application of the plaster, its effect in subduing the inflammation were very manifest.

Tenth—The spots on the arms have disappeared, but there are three visible in the face.

Eleventh—Two spots on the face are gone, the other barely perceptible.

Thirteenth—The pustule delineated in the second plate in the treatise on Variolæ Vaccinæ is a correct representation of that on the child's arm as it appears at this time.

Fourteenth—Two fresh spots appear on the face. The pustule on the arm nearly converted into a scab. As long as any fluid remained in it, it was limpid.

James Hill, four years old, was inoculated on the same day, and with part of the same matter which infected Stephen Jenner. It did not appear to have taken effect till the fifth day.

Seventh—A perceptible vesicle. This evening the patient became a little chilly; no pain or tumor discoverable in the axilla.

Eighth—Perfectly well.

Ninth—The same.

Tenth—The vesicle more elevated than I have been accustomed to see it, and assuming more perfectly the variolous character that is common with the cow-pox at this stage.

Eleventh—Surrounded by an inflammatory redness about the size of a shilling, studded over with minute vesicles. The pustule contained a limpid fluid till the fourteenth day, after which it was encrusted over in the usual manner; but this incrustation or scab being accidentally rubbed off it was slow in healing.

These children were afterwards fully exposed to the small-pox contagion without effect.

Having been requested by my friend, Mr. Henry Hicks, of Eastington, in this county, to inoculate two of his children, and at the same time some of his servants and the people employed in his manufactry, matter was taken from the arm of this boy for the purpose. The number inoculated was eighteen. They all took the infection; and, either on the fifth or sixth day, a vesicle was perceptible on the punctured part. Some of them began to feel a little unwell on the eighth day, but the greater number on the ninth. Their illness, as in the former cases described, was of short duration, and not sufficient to interrupt, but at very short intervals, the children from their amusements, or the servants and manufacturers from following their ordinary business.

Three of the children whose employment in the manufactory was in some degree laborious, had an inflammation on their arms beyond the common boundary about the eleventh or twelfth day, when the feverish symptoms, which before were nearly gone off, again returned, accompanied with increase of axillary tumors. In these cases (clearly perceiving the symptoms were governed by the state of the arms), I applied on the inoculated pustules, and renewed the application three or four times within an hour, a pledget of lint, previously soaked in *aqua lythargyri acetati*,* and covered the hot efflorescence surrounding them with cloths dipped in cold water.

The next day I found that this simple mode of treatment had succeeded perfectly. The inflammation was nearly gone off, and with it the symptoms which it had produced.

Some of these patients have since been inoculated with variolous matter without any effect beyond a little inflammation on the part where it was inserted.

Why the arms of those inoculated with the vaccine matter in the country should be more disposed to inflame than those inoculated in London, it may be difficult to determine. From comparing my own cases with some transmitted to me by Dr. Pearson and Dr. Woodville, this appears to be the fact, and what strikes me as still more extraordinary with respect to those inoculated in London is the appearance of maturating eruptions. In the two instances only which I have mentioned (the one from the inoculated, the other from the casual cow-pox), a few red spots appeared, which quickly went off without maturating. The case of the Rev. Mr. Moore's servant may indeed seem like a deviation from the common appearances in the country, but the nature of these eruptions was not ascertained beyond their not possessing the property of communicating the disease by their effluvia. Perhaps the difference we perceive in the state of the arms may be owing to some variety in the mode of action of the virus from the skin of those who breathe the air of London and those who live in the country. That the erysipelas assumes a different form in London from what we see it put on in the country, is

*Goulard's extract of Saturn.

act very generally acknowledged. In calling the inflammation that is excited by the y-pox virus erysipelatous, perhaps I may not be critically exact, but it certainly approaches near to it. Now, as the disease going forward in the part infected with the us may undergo different modifications according to the peculiarities of the constitution on which it is to produce its effect, may it not account for the variation which has en observed?

To this it may probably be objected that some of the patients inoculated and who had stules in consequence were newly come from the country, but I conceive that the nges wrought in the human body, through the medium of the lungs, may be extremely id; yet, after all, further experiments made in London with vaccine virus generated the country, must finally throw a light on what now certainly appears obscure and sterious.

The principal variation perceptible to me in the action of the vaccine virus generated London from that produced in the country was its proving more certainly infectious, l giving a less disposition in the arm to inflame. There appears also a greater elevan of the pustule above the surrounding skin. In my former cases the pustule proed by the insertion of the virus was more like one of those which are so thickly ead over the body in a bad kind of confluent small-pox, except that I saw no instance ous being formed in it, the matter remaining limpid till the period of scabbing

Wishing to see the effects of the disease on an infant newly born, my nephew, Mr. ry Jenner, at my request, inserted the vaccine virus into the arm of a child about enty hours old. His report to me is that the child went through the disease without arent illness, yet that it was found effectually to resist the action of variolous matter h which it was subsequently inoculated.

have had an opportunity of trying the effects of the cow-pox matter on a boy who, day preceding its insertion, sickened with the measles. The eruption of the measles, ned with a cough, a little pain in the chest, and the usual symptoms accompanying t disease, appeared on the third day and spread all over him. The disease went ough its course without any deviation from its usual habits; and, notwithstanding , the cow-pox virus excited its common appearances, both on the arm and on the stitution without any sensible interruption; on the sixth there was a vesicle.

ighth—Pain in the axilla, chilly and affected with headache.

inth—Nearly well.

welfth—The pustule spread to the size of a large split pea, but without any surroundeffloresence. It soon after scabbed and the boy recovered his general health rapidly.

it should be observed that before it scabbed, the efflorescence which had suffered a porary suspension, advanced in the usual manner. Here we see a deviation from the nary habits of the small-pox, as it has been observed that the presence of the sles suspends the action of variolous matter, however the suspension of the efflornce is worthy of observation.

he very general investigation that is now taking place chiefly through inoculation I again repeat my earnest hope that it may be conducted with that calmness and eration which should ever accompany a philosophical research) must soon place the ine disease in its just point of view. The result of all my trials with the virus on human subject has been uniform. In every instance the patient who has felt its inace has completely lost the susceptibility for the variolous contagion, and as these ances are now become numerous, I conceive that, joined to the observations in the er part of this paper, they sufficiently preclude me from the necessity of entering controversis with those who have circulated reports adverse to my assertion on no r evidence than what has been casually collected.

A CONTINUATION OF

FACTS AND OBSERVATIONS

RELATIVE TO THE

VARIOLÆ VACCINÆ,

OR COW POX.

EDWARD JENNER, M. D. F. R. S. &C

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1801.

A CONTINUATION OF FACTS AND OBSERVATIONS, &C., &C.

Since my former publications on vaccine inoculation, I have had the satisfaction of eeing it extend very widely. Not only in this country is the subject pursued with ar- or, but from my correspondence with many respectable medical gentlemen on the Con- inent (among whom are Dr. De Carro, of Vienna, and Dr. Ballhorn, of Hanover), I find is as warmly adopted abroad, where it has afforded the greatest satisfaction. I have he pleasure, too, of seeing that the feeble efforts of a few individuals to depreciate the ew practice are sinking fast into contempt beneath the immense mass of evidence hich has risen up in support of it.

Upwards of 6000 persons have now been inoculated with the virus of cow-pox, and the r greater part of them have since been inoculated with that of small-pox, and exposed its infection in every rational way that could be devised without effect.

It was very improbable that the investigation of a disease so analogous to the small- ox should go forward without engaging the attention of the physician of the small- ox hospital in London.

Accordingly, Dr. Woodville, who fills that department with so much respectability, ok an early opportunity of instituting an inquiry into the nature of the cow-pox. This quiry was begun in the early part of the present year, and in May Dr. Woodville pub- hed the result, which differs essentially from mine in a point of much importance. It pears that three-fifths of the patients inoculated were affected with eruptions for the st part so perfectly resembling the small-pox as not to be distinguished from them. this subject it is necessary that I should make some comments.

When I consider that out of the great number of cases of casual inoculation immedi- ly from cows which have from time to time presented themselves to my observation d the many similar instances which have been communicated to me by medical gentle n in this neighborhood; when I consider that the matter with which inoculations re conducted in the years 1797, 1798, 1799, was taken from different cows, and that in instance anything like a variolous pustule appeared.

cannot feel disposed to imagine that eruptions similar to those described by Dr. odwille, have ever been produced by the *pure, uncontaminated cow-pox virus*; on the trary, I do suppose that those which the doctor speaks of originated in the action of iolous matter, which crept into the constitution with the vaccine. And this I pre- ne happened from the inoculation of a great number of the patients with variolous ter, (some on the third, others on the fifth day), after the vaccine had been applied; it should be observed, that the matter thus propagated became the source of future culations in the hands of many medical gentlemen who appeared to have been pre- usly unacquainted with the nature of the cow-pox.

nother circumstance strongly, in my opinion, supporting this supposition is the fol- ing: The cow-pox has been known among our dairies time immemorial. If pustules , like the variolous, were to follow the communication of it from the cow to the er, would not such a fact have been known, and recorded at our farms? Yet neither farmers nor the medical people of the neighborhood have noticed sueh occurence.

few scattered pimples, I have some times though very rarely, seen, the greater part of h have generally disappeared quickly, but some have remained long enough to sup- te at their apex. The cuticular inflammation, whether springing up spontaneously or ng from the application of acrid substances, such, for instance as *Cantharides, Pix Bur- ica, Antimonium Tartavizatum*, etc., will often produce cutaneous affections, not only the seat of the inflammation, but on some parts of the skin far beyond its boundary, is a known fact. It is, doubtless, on this principle that the inoculated cow-pox pustule ts concomitant efflorescence may in very irritable constitutions produce this affec- The eruption I allude to has commonly appeared sometimes in the third week inoculation, but this appearance is too trivial to excite the least regard.

change which took place in the general appearance during the progress of the ne inoculation at the small-pox hospital should likewise be considered.

hough at first it took on so much of the variolous character, as to produce pus- in three csase out of five, yet in Dr. Woodville's last report, published in June, he "Since the publication of my reports of inoculations for the cow-pox, upwards cases have been under my care, and out of this number only thirty-nine had pustules

that suppurated, namely, out of the first hundred, nineteen had pustules; out of the second thirteen; and out of the last hundred and ten, only seven had pustules. Thus it appears that the disease has been considerably milder, which I am inclined to attribute to a greater caution used in the choice of the matter with which the infection was communicated, for lately that which has been employed for this purpose has been taken only from those patients in whom the cow-pox proved very mild and well characterized.*

The inference I am induced to draw from these premises is very different. The decline and finally the total extinction nearly of these pustules in my opinion are more fairly attributable to the cow-pox virus assimilating the variolous,† the former being the original, the latter the same disease under a peculiar and at present an unexplicable modification.

One experiment tending to elucidate the point under discussion, I had myself an opportunity of instituting. On the supposition of its being possible that the cow which ranges over the fertile meadows in the vale of Gloucester, might generate a virus different in some respects in its qualities from that produced by the animal artificially pampered for the production of milk for the metropolis, I procured during my residence there in the spring, some cow-pox virus from a cow at one of the London milk farms.† It was immediately conveyed into Gloucestershire to Dr Marshall, who was then extensively engaged in the inoculation of the cow-pox, the general result of which, and of inoculation in particular, with this matter, I shall lay before my readers in the following communication from the doctor:

"*Dear Sir*—My neighbor, Mr. Hicks, having mentioned your wish to be informed of the progress of inoculation here for the cow-pox, and he also having taken the trouble to transmit to you my minutes of the cases which have fallen under my care, I hope you will pardon the trouble I now give you in stating the observations I have made upon the subject. When first informed of it, having two children who had not had the small-pox I determined to inoculate them for the cow-pox whenever I should be so fortunate as to procure matter proper for the purpose. I was, therefore, particularly happy when I was informed that I could procure matter from some of those whom you had inoculated. In the first instance I had no intention of extending the disease further than my own family, but the very extensive influence which the conviction of its efficacy in resisting the small-pox has had upon the minds of the people in general, has rendered that intention nugatory, as you will perceive by the continuation of my cases, inclosed in this letter,‖ by which it will appear that since the twenty-second of March, I have inoculated an hundred and seven persons, which, considering the retired situation I reside in, is a very great number. There are also other considerations which, besides that of its influence in resisting the small-pox, appears to have had their weight, namely, the peculiar mildness of the disease, the known safety of it, and its not having in any instance prevented the patient from following his ordinary business. In all the cases under my care there have only occurred two or three which required any application, owing to erysipelatous inflammation on the arm, and they immediately yielded to it. In the remainder the constitutional illness has been slight, but sufficiently marked and considerably less than I ever observed in the same number inoculated with the small-pox. In only one or two of the cases have any other eruptions appeared than those around the spot where the matter was inserted, and those near the infected part. Neither does there appear in the cow-pox to be the least exciting cause to any other disease, which in the small-pox has been frequently observed, the constitution remaining in as full health and vigor after the termination of the disease as before the infection. Another important consideration appears to be the impossibility of the disease being communicated except by actual contact of the matter of the pustule, and consequently the perfect safety of the remaining part of the family, supposing only one or two should wish to be inoculated at the same time.

Upon the whole it appears evident to me that the cow-pox is a pleasanter, shorter and infinitely more safe disease than the inoculated small-pox, when conducted in the most careful and approved manner, neither is the local affection of the inoculated part or the constitutional illness near so violent. I speak with confidence on the subject, having had an opportunity of observing its effect upon a variety of constitutions, from three

*In a few days after the cow-pox inoculation was introduced at the small-pox hospital I was favored with some virus from this stock. In the first instance it produced a few pustules, which did not maturate, but in the subsequent cases none appeared.

†In my first publication on this subject I expressed an opinion that the cow-pox and the small-pox were the same diseases under different modifications. In this opinion Dr. Woodville has concurred. The axiom of the immortal Hunter that "two diseased actions cannot take place at the same time in one and the same part," will not be injured by the admission of this theory.

‡It was taken by Mr. Tanner, then resident student at the Veterinary College, from a cow at Mr. Clark's farm at Kentish town.

‖Dr. Marshall has detailed these cases with great accuracy, but their publication would now be deemed superfluous.—E. J.

months old to sixty years, and to which I have paid particular attention. In the cases alluded to here, you will observe that the removal from the original source of the matter has made no alteration or change in the nature or appearance of the disease, and that it may be continued *ad infinitum* (I imagine) from one person to another (if care be observed in taking the matter at a proper period) without any necessity of recurring to the original matter of the cow.

I should be happy if any endeavors of mine could tend further to elucidate the subject, and shall be much gratified in sending you any further observations I may be enabled to make. I have the pleasure to subscribe myself, dear sir, etc.,

JOSEPH H. MARSHALL.

Eastington, Gloucestershire, April 26, 1799.

The gentleman who has favored me with the above accounts, has continued to prosecute his inguiries with unrelenting industry, and has communicated the result in another letter, which, at his request, I lay before the public without abbreviation.

DR. MARSHALL'S SECOND LETTER.

"*Dear Sir*—Since the date of my former letter, I have continued to inoculate with the cow-pox virus. Including the cases before enumerated, the number now amounts to four hundred and twenty-three. It would be tedious and useless to detail the progress of the disease in each individual—it is sufficient to observe, that I noticed no deviation in any respect from the cases I formerly adduced. The general appearances of the arm exactly correspond with the account given in your first publication. When they were disposed to become troublesome by erysipalatous inflammation, an application of equal parts of vinegar and water always answered the desired intention. I must not omit to inform you, that when the disease had duly acted upon the constitution, I have frequently used the vitriolic acid. A portion of a drop applied with the head of a probe or any convenient utensil, upon the pustule, suffered to remain about forty seconds and afterwards washed off wtih sponge and water, never fail to stop its progress and expedite formation of a scab.

"I have already subjected two hundred and eleven of my patients to the action of variolous matter, *but every one resisted it.*

"The result of my experiments (which were made with every requisite caution) has fully convinced me that the true cow-pox is a safe and infalible preventive from the small-pox; that in no case which has fallen under my observation has it been in any considerable degree troublesome, much less have I seen anything like danger; for in no instance were the patients prevented from their ordinary employments.

"In Dr. Woodville's publication on the cow-pox, I notice an ordinary fact. He says that the generality of his patients had pustules. It certainly appears extremely extraordinary that in all my cases there never was but one pustule which appeared on a patient's elbow on the inoculated arm, and maturated. It appeared exactly like that on the incised part.

"The whole of my observations, founded as it appears on extensive experience, leads to these obvious conclusions; that those cases which have been or may be adduced against the preventive powers of the cow-pox, could not have been those of the true and, since it must happen to be absolutely impossible that I should have succeeded in such a number of cases without a single exception, if such a preventive power did not exist. I cannot entertain a doubt that the inoculated cow-pox must quickly supercede the use of small-pox. If the many important advantages which must result from the new practice are considered, we may reasonably infer that public benefit, that sure test of the real merit of discoveries, will render it generally extensive.

"To you, sir, as the discoverer of this highly-beneficial practice, mankind are under the highest obligations. As a private individual, I participate in the general feeling; and particularly as you have afforded me an opportunity of noticing the effects of a singular disease, and of viewing the progress of the most curious experiment that ever is recorded in the history of physiology.

"I remain, dear sir, etc.,

"JOSEPH H. MARSHALL.

"P. S.—I should have observed that of the patients I inoculated and enumerated in my letter, one hundred and twenty-seven were infected with the matter you sent me from the London cow. I discovered no dissimilarity of symptoms in those cases, from those which I inoculated from matter procured in this county. No pustules have occurred, except in one or two cases, where a single one appeared on the inoculated arm. No inflammation was apparent in the local inflammation. There was no suspension of ordinary employment among the laboring people, nor was any medicine required.

"I have frequently inoculated one or two in a family, and the remaining part of it some weeks afterwards. The uninfected have slept with the infected during the whole time of the disease without feeling it; so that I am fully convinced the disease cannot be taken but by actual contact with the matter.

"A curious fact has lately fallen under my observation, on which I leave you to comment:

"I visited a patient with the confluent small-pox, and charged a lancet with some of the matter. Two days afterwards I was desired to inoculate a woman and four children with the cow-pox, and I inadvertently took the vaccine matter on the same lancet which was before charged with that of small-pox. In three days I discovered the mistake, and fully expected that my five patients would be infected with small-pox; but I was agreeably surprised to find the disease to be the genuine cow-pox, which proceeded without deviating in any particular from my former cases, I afterwards inoculated these patients with variolous matter, but all of them resisted its action.

"I omitted mentioning another great advantage that now occurs to me in the inoculated cow-pox; I mean the safety with which pregnant women may have the disease communicated to them. I have inoculated a great many females in that situation, and never observed their cases to differ in any respect from those of my own patients. Indeed, the disease is so mild, that it seems as if it might at all times be communicated with the most pertect safety."

I shall here take the opportunity of thanking Dr. Marshall and those other gentlemen who have obligingly presented me with the result of their inoculations; but, as they all agree in the same point as that given in the above communication, namely, the security of the patient from the effects of the small-pox after the cow-pox, their perusal, I presume, would afford us satisfaction that has not been amply given already. Particular occurrences I shall of course detail. Some of my correspondents have mentioned the appearance of small-pox-like eruptions at the commencement of their inoculations; but in these cases the matter was derived from the original stock at the small-pox hospital.

I have myself inoculated a very considerable number from the matter produced by Dr. Marshall's patients, originating in the London cow, without observing pustules of any kind, and have dispersed it among others who have used it with a similar effect. From this source Mr. H. Jenner informs me, he has inoculated an hundred patients without observing eruption. Whether the nature of the virus will undergo any change from being farther removed from its original source, in passing successfuly from one person to another time alone can determine. That which I am now employinaghas been in use near eight months, and not the least change is perceptible in its mode of action, either locally or constitutionally. There is, therefore, every reason to expect that its effects will remain unaltered, and that we shall not be under the necessity of seeking fresh supplies from the cow.

The following observations were obligingly sent me by Mr. Tierny assistant surgeon to the South Gloucester Regiment of Militia, to whom I am indebted for a former report on this subject:

"I inoculated with the cow-pox matter, from the eleventh to the latter part of April twenty-five persons including women and children. Some on the eleventh were inoculated with the matter, Mr. Shrapnell (surgeon to the regiment) had from you, the others with matter taken from these. The progress of the punchette was accurately observed, and its appearance seemed to differ from the small-pox in having less inflammation around its basis on the first days, that is, from the third to the seventh, but after this the inflammation increased, extending on the tenth or eleventh day to a circle of an inch and a-half from its centre, and threatening very sore arms; but this, I am happy to say, was not the case, for, by applying mercurial ointment to the inflamed part, which was repeated daily until the inflammation went off, the arm got well without any further application or trouble. The constitutional symptoms which appeared on the eighth or ninth day after inoculation, scarcely deserved the name of disease, as they were so slight as to be barely perceptible, ecept that I could connect a slight headache and langour with a stiffness; and rather painful sensation in the axilla. This latter symptom was the most striking it remained from twelve to forty-eight hours. In no case did I observe the smallest pustule, or even discoloration of the skin like an incipient pustule, except about the part where the virus had been applied.

After all these symptons had subsided and the arms were well, I inoculated four of this number with variolous mattter taken from a patient in another regiment. In each of these it was inserted several times under the cuticle, producing slight inflammation on the second or third day, and always disappearing before the fifth or sixth; except in one who had the cow-pox in Gloucestershire before he joined us, and who also received it at this time by inoculation. In this man the puncture inflamed, and his arm was much sorer than from the infection of the cow-pox virus, but there was no pain in the axilla, nor could any constitutional affection be observed.

"I have only to add that I am now fully satisfied of the efficacy of the cow-pox in preventing the appearance of the small-pox, and that it is a most happy and salutory substitute for it.

"I remain, etc., "M. J. TIERNY,

Although the susceptibility of the virus of the cow-pox is for the most part lost in those who have had the small-pox, yet in some constitutions it is only partially destroyed, and in others it does not appear to be in the least diminished.

By far the greater number on whom trials were made resisted it entirely; yet I found some on whose arms the pustule, from inoculation, was formed completely, but without producing the common efflorescent blush around it, or any constitutional illness, while others have had the disease in the most perfect manner. A case of the latter kind having been presented to me by Mr. Fewster, Surgeon, of Thornbury, I shall insert it:

"Three children were inoculated with the vaccine matter you obligingly sent me. On calling to look at their arms three days after, I was told that John Hodges, one of the three, had been inoculated with the small-pox when a year old, and that he had a full burthen, of which his face produced plentiful marks, a circumstance I was not before made acquainted with. On the sixth day the arm of this boy appeared as if inoculated with variolous matter, but the pustule was rather more elevated. On the ninth day he complained of violent pain in his head and back, accompanied with vomiting and much fever. The next day he was very well, and went to work as usual. The punctured part began to spread, and there was the areola around the inoculated part to a considerable extent.

"As this is contrary to an assertion made in the Medical and Physicial Journal, No. 8, I thought it right to give you this information, and remain,

"Dear Sir, etc., "J. FEWSTER."

It appears, then, that the animal economy, with regard to the action of this virus, is under the same laws as it is with respect to the variolous virus, after previously feeling its influence, as far as comparisons can be made between two diseases.

Some striking instances of the power of the cow-pox in suspending the progress of the small-pox, after the patients had been several days casually exposed to the infection have been laid before me by Mr. Lyford, Surgeon, of Winchester, and my nephew, the Rev. G. C. Jenner. Mr. Lyford, after giving an account of his extensive and successful practice in the vaccine inoculation in Hampshire, writes as follows:

"The following case occurred to me a short time since, and may probably be worth your notice. I was sent for to a patient with the small-pox, and on inquiry found that, five days previous to my seeing him, the eruption began to appear. During the whole of this time, two children, who had not had the small-pox, were constantly in the room with their father, and frequently on the bed with him. The mother consulted me on the propriety of inoculating them, but objected to my taking the matter from their father, as he was subject to erysipelas. I advised her by all means to have them inoculated at that time, as I could not procure any variolous matter elsewhere. However, they were inoculated with vaccine matter; but I cannot say I flattered myself with its proving successful, as they had previously been so long, and still continued to be, exposed to the variolous infection.

Notwithstanding this, I was agreeably surprised to find the vaccine disease advance and go through its regular course; and, if I may be allowed the expression to the total extinction of the small-pox.

Mr. Jenner's cases were not less satisfactory. He writes as follows:

"A son of Thomas Stinchcomb, of Woodford, near Berkeley, was infected with the natural small-pox at Bristol, and came to his father's cottage. Four days after the eruptions had appeared upon the boy, the family (none of which had ever had the small-pox), consisting of the father, mother, and five children, were inoculated with vaccine virus. On the arm of the mother it failed to produce the least effect, and she of course had the small-pox;* but the rest of the family had the cow-pox in the usual mild way, and were not infected with the small-pox, although they were in the same room, and the children slept in the same bed with their brother, who was confined to it with the natural small-pox; and all subsequently with their mother.

"I attended this family with my brother, Mr. H. Jenner."

The following cases are of too singular a nature to remain unnoticed.

Miss R———, a young lady about five years old, was seized, on the evening of the eighth day after inoculation with vaccine virus, with such symptoms as commonly denote the accession of violent fever. Her throat was also a little sore, and there were some uneasy sensations about the muscles of the neck. The day following a rash was perceptible on her face and neck, so much resembling the efflorescence of the *Scarlatina anginosa*, that I was induced to ask whether Miss R——— had been exposed to the contagion of that disease. An answer in the affirmative, and the rapid spreading of the rash over the skin, at once relieved me from much anxiety respecting the nature of the malady, which went through its course in the ordinary way, but not without symptoms which were alarming, both to myself and Mr. Lyford, who attended with me.

* Under similar circumstances, I think it would be advisable to insert the matter into each arm, which would be more likely to insure the success of the matter.—E. J.

There was no apparent deviation in the ordinary progress of the pustule to a state of maturity, from what we see in general; yet there was a total suspension of the *Areola*, or florid discoloration around it, until the *Scarlatina* had retired from the constitution. As soon as the patient was freed from this disease, this appearance advanced in the usual way.*

The case of Miss H ——R—— is not less interesting than that of her sister above related. She was exposed to the contagion of the *Scarlatina* at the same time, and sickened almost at the same hour. The symptoms continued severe about twelve hours, when the scarlatina rash showed itself faintly upon her face, and partly upon her neck. After remaining two or three hours it suddenly disappeared, and she became perfectly free from every complaint. My surprise at this sudden transition from extreme sickness to health in great measure ceased, when I observed that the inoculated pustule had occasioned in this case, the common efflorescent appearance around it, and that as it approached the centre, it was nearly in an erysipelatous state. But the remarkable part of this history is, that on the fourth day afterwards, as soon as the efflorescence began to die away upon the arm, and the pustule to dry up, the *Scarlatina* again appeared, her throat became sore, the rash spread all over her. She went fairly through the disease, with its common symptoms.

That these were actually cases of scarlatina was rendered certain by two servants in the family falling ill at the same time with the distemper, who had been exposed to the infection with the young ladies.

Some there are who suppose the security from the small-pox obtained through the cow-pox will be of a temporary nature only. This supposition is refuted, not only by analogy with respect to the habits of diseases of a similar nature, but by incontroventible facts, which appear in great numbers against it. To those already adduced in the former part of my first Treatise, many more might be added were it deemed necessary; but among the cases I refer to, one will be found of a person who had the cow-pox fifty-three years before the offect of the small-pox was tried upon him. As he completely resisted it, the intervening period I conceive must necessarily satisfy any reasonable mind. Should further evidence be thought necessary, I shall observe, that among the cases presented to me by Mr. Fry, Mr. Darke, Mr Tierny, Mr. H. Jenner, and others, there were many whom they inoculated ineffectually with variolous matter, who had gone through the cow-pox many years before this trial was made.

It has been imagined that the cow-pox is capable of being communicated from one person to another by effluvia without the intervention of inoculation. My experiments made with the design of ascertaining this important point, all tend to establish my original position, that it is not infectious, except by contact. I have never hesitated to suffer those, on whose arms there were pustules exhaling the effluvia, from associating or even sleeping with others who never had experienced either the cow-pox or the small-pox, and further, I have repeatedly, among children, caused the uninfected to breathe over the inoculated vaccine pustules during their whole progress; yet these experiments were tried without the least effect. However, to submit a matter so important to a still further scrutiny, I desired Mr. H. Jenner to make any further experiments which might strike him as most likely to establish or refute what had been advanced on this subject. He has since informed me, "that the inoculated children at the breast, whose mothers had not gone through either the small-pox or cow-pox, that he had inoculated mothers whose sucking infants had never undergone either of these diseases; that the effluvia from the inoculated pustules, in either case, had been inhaled from day to day during the whole progress of their maturation, and that there was not the least perceptible effect from these exposures. One woman he inoculated about a week previous to her *accouchement*, that her infant might be the more fully and conveniently exposed to the pustule; but as in the former instances, no infection was given, although the child frequently slept on the arm of its mother, with its nostrils and mouth exposed to the pustule in the fullest state of maturity, In a word, is it not impossible for the cow-pox, whose *only* manifestation appears to consist in the pustules *created by contact*, to produce *itself* by effluvia.

In the course of a late inoculation, I observed an appearance which it may be proper here to relate. The punctured part on a boy's arm (who was inocculated with fresh limpid virus) on the sixth day, instead of showing a beginning vesicle, which is usual in the cow-pox at that period, was encrusted over with a rugged amber-colored scab. The scab continued to spread and increase in thickness for some days, when at its edges a vesicated ring appeared, and the disease went through its ordinary course, the boy having had soreness in the axilla, and some slight indisposition. With the fluid matter taken from his arm, five persons were inoculated. In one it took no effect. In another

*I witnessed a similar fact in a case of measles. The pustule from the cow-pox virus advanced to maturity, while the measles existed in the constitution, but no efflorescence appeared around it until the measles had ceased to exert its influence.

t produced a perfect pustule without any deviation from the common appearance; but in he other three the progress of the inflammation was exactly similar to the instance which fforded the virus for their inoculation; there was a creeping scab of a loose texture, nd subsequently the formation of limpid fluid at its edges. As these people were all mployed in laborious exercises, it is possible that these annomalous appearances might we their origin to the friction of the clothes on the newly inflamed part of the arm. I ave not yet had an opportunity of exposing them to small-pox.

In the early part of this inquiry I felt far more anxious respecting the inflammation of he inoculated arm than at present, yet that this affection will go on to a greater extent han could be wished, is a circumstance sometimes to be expected. As this can be checked, r even entirely subdued by very simple means, I see no reason why the patient should el an uneasy hour, because an application may not be absolutely necessary. About the nth or eleventh day, if the pustule has proceeded regularly, the appearance of the arm ill almost to a certainty indicate whether this is to be expected or not. Should it ppen, nothing more need be done than to apply a single drop of the *aqua lythargyr etati** upon the pustule. and having suffered it to remain two or three minutes, to cover e efflorescence surrounding the pustule with a piece of linen dipped in the *aqua thargyr compos.*† The former may be repeated twice or thrice during the day; the tter as often as it may feel agreeable to the patient.

When the scab is prematurely rubbed off (a circumstance not unfrequent among ildren and working people), the application of a little *aqua lythargyri acet.* to the part, mediately coagulates the surface which supplies its place, and prevents a sore.

In my former Treatises on this subject, I have remarked that the human constitution quently retains its susceptibility of the small-pox contagion (both from effluvia and ntact) after previously feeling its influence. In further corroboration of this declara- n, many facts have been communicated to me by various correspondents. I shall ect one of them.

"*Dear Sir*—Society at large must I think feel much indebted to you for your Inquiries l Observations on the Nature and Effects of the Variolæ Vaccinæ, etc., etc. As I con- ve what I am now about to communicate to be of some importance, I imagine it can- be uninteresting to you, especially as it will serve to corroborate your assertion of susceptibility of the human system of the variolous contagion, although it has pre- usly been made sensible of its action. In November, 1793, I was desired to inoculate erson with the small-pox. I took the variolous matter from a child under the disease he natural way, who had a large burden of distinct pustules. The mother of the d being desirous of seeing my method of communicating the disease by inoculation, r having opened a pustule, I introduced the point of my lancet in the usual way on back part of my own hand, and thought no more of it until I felt a sensation in the , which reminded me of the transaction. This happened upon the third day; on the th there were all the appearances common to inoculation, at which I was not at all sur- ed; nor did I feel myself uneasy, upon perceiving the inflammation continue to increase e sixth and seventh day, accompanied with a small quantity of fluid, repeated ex- ments having taught me it might happen so with persons who had undergone the ase, and yet would escape any constitutional affection; but I was not so fortunate; n the eighth day I was seized with all the symptons of the eruptive fever, but in a more violent degree than when I was before inoculated, which was about eighteen s previous to this, when I had a considerable number of pustules. I must confess I now greatly alarmed, although I had been much engaged in the small-pox, having fferent times inoculated not less than two thousand persons. I was convinced my nt indisposition proceeded from the insertion of the variolous matter, and, there- anxiously looked for an eruption. On the tenth day I felt a very unpleasant sensa- of stiffness, and heat on each side of my face near my ear, and the fever began to ne. The affection in my face soon terminated in three or four pustules attended inflammation, but which did not maturate, and I was presently well.

"I remain, dear sir, etc,

"THOMAS MILES."

is Inquiry is not now so much in its infancy as to restrain me from speaking more posi- than formerly on the important point of scrofula, as connected with the small-pox. ery practitioner in medicine, who has extensively inoculated with the small-pox, or ttended many of those who have had the distemper in the natural way, must ac- ledge that he has frequently seen scrofulous affections, in some form or another, imes rather quickly showing themselves after the recovery of the patients. Con- g this fact to be admitted, as I presume it must be by all who have carefully at- l to the subject, may I not ask whether it does not appear probable that the gen-

ract of Saturn.

ard water. For further information on this subject see the first treatise on the Var. Vac., Dr. Mar letters. etc.

eral introduction of the small-pox into Europe has not been among the most conducive means in exciting that formidable foe to health? Having attentively watched the effects of the cow-pox in this respect, I am happy in being able to declare, that the disease does not appear to have the least tendency to produce this destructive malady.

The scepticism that appeared even among the most enlightened of medical men, when my sentiments on the important subject of the cow-pox were first promulgated, was highly laudable. To have admitted the truth of a doctrine, at once so novel and so unlike anything that had ever appeared in the annals of medicine, without the test of the most rigid scrutiny would have bordered upon temerity; but now, when that scrutiny has taken place, not only among ourselves, but in the first professional circles in Europe, and when it has been uniformly found in such abundant instances, that the human frame, when once it has felt the influence of the genuine cow-pox in the way that has been described, is never afterwards, at any period of its existence, assailable by the small-pox, may I not with perfect confidence congratulate my country and society at large on their beholding, in the mild form of the cow-pox, an antidote that is capable of extirpating from the earth a disease which is every hour devouring its victims; a disease that has ever been considered as the severest scourge of the human race!

[FINIS.]

DR. JENNER'S ACCOUNT

OF THE

ORIGIN OF THE VACCINE INOCULATION.

"The most important discoveries, when familiarized to the mind, are ntemplated with indifference. Who now wonders at the discovery of nerica, or the circulation of the blood? There is, however, a period be- een the conception of a discovery and its mature birth, fraught with more ngs than war or women know: and there is no light in which the human nd can be viewed more interesting than during this anxious period. henever, therefore, the author of any greatly useful invention details the ogress of his own mind during the completion of his plan, the history is used with avidity. On these grounds we conclude that our readers l be much gratified by the following narrative:"

"*I am induced to give the following concise history of the origin of vaccine culation, from my frequently observing that those who only consider the sub- cursorily, confound the casual cow-pox with the disease when excited by culation.*

EDWARD JENNER.

"My inquiry into the nature of the cow-pox commenced upwards of nty-five years ago. My attention to this singular disease was first ited by observing that, among those whom, in the country, I was fre- ntly called upon to inoculate, many resisted every effort to give them ll-pox. These patients, I found, had undergone a disease they called cow-pox, contracted by milking cows affected with a peculiar eruption heir teats. On inquiry, it appeared that it had been known among the ies time immemorial, and that a vague opinion prevailed of the small- . This opinion I found was, comparatively, new among them; for all older farmers declared they had no such idea in their early days—a umstance that seemed easily to be accounted for, from my knowing the common people were very rarely inoculated for the small-pox, till practice was rendered general by the improved method introduced by Suttons; so that the working people in the dairies were seldom put to test of the preventive powers of the cow-pox.

"In the course of the investigation of this subject, which, like all others complex and intricate nature, presented many difficulties, I found some of those *who seemed to have undergone the cow-pox*, nevertheless, noculation with the small-pox, felt its influence just the same as if no ase had been communicated to them from the cow. This occurrence ne to inquire among the medical practitioners in the country around who all agreed in this sentiment, that the cow-pox was not to be relied as a certain preventive of the small-pox. This for a while damped, lid not extinguish my ardor; for, as I proceeded, I had the satisfac- to learn that the cow was subject to some varieties of spontaneous tions upon her teats: that they were all capable of communicating to the hands of the milkers; and that whatever sore was derived the animal, was called in the dairy the cow-pox. Thus I surmounted at obstacle, and, in consequence, was led to form a distinction be-

tween these diseases, one of which only I have denominated the *true*, the others the *spurious* cow-pox, as they possess no specific power over the constitution. This impediment to my progress was not long removed, before another, of far greater magnitude in its appearance, started up. There were not wanting instances to prove, that when the true cow-pox broke out among the cattle at a dairy, a person who had milked an infected animal, and had thereby apparently gone through the disease in common with others, was liable to receive the small-pox afterwards. This, like the former obstacle, gave a painful check to my fond and aspiring hopes; but, reflecting that the operations of nature are generally uniform, and that it was not probable the human constitution (having undergone the cow-pox) should in some instances be perfectly shielded from the small-pox, and in many others remain unprotected, I resumed my labors with redoubled ardor. The results was fortunate; for I now discovered that the virus of cow-pox was liable to undergo progressive changes, from the same causes precisely as that of small-pox; and that, when it was applied to the human skin in its degenerated state, it would produce the ulcerative effects in as great a degree as when it was not decomposed, and sometimes far greater; but having lost *its specific properties* it was incapable of producing that change upon the human frame which is requisite to render it unsusceptible of the variolous contagion; so that it became evident a person might milk a cow one day, and having caught the disease, be for ever secure; while another person, milking the same cow the next day, might feel the influence of the virus in such a way as to produce a sore or sores, and, in consequence of this, might experience an indisposition to a considerable extent; yet, as has been observed, the specific quality being lost, the constitution would receive no peculiar impression.

"Here the close analogy between the virus of small-pox and of cow-pox becomes remarkably conspicuous; since the former, when taken from a recent pustule, and immediately used, gives the perfect small-pox to the person on whom it is inoculated; but, when taken in a far advanced stage of the disease, or when (although taken early), previously to its insertion, it be exposed to such agents as, according to the established laws of nature, cause its decomposition, it can no longer be relied on as effectual. This observation will fully explain the source of those errors which have been committed by many inoculators of the cow-pox. Conceiving the whole process to be so extremely simple as not to admit of a mistake, they have been heedless about the state of the vaccine virus; and finding it limpid, as part of it will be, even in an advanced stage of the pustule, when the greater portion has been converted into a scab, they have felt an improper confidence, and sometimes mistaken a spurious pustule, which the vaccine fluid in this state is capable of exciting, for that which possesses the perfect character.

"During the investigation of the casual cow-pox, I was struck with the idea that it might be practicable to propagate the disease by inoculation, after the manner of the small-pox, first from the cow, and, finally, from one human being to another. I anxiously waited some time for an opportunity of putting this theory to the test. At length the period arrived. The first experiment was made upon a lad of the name of Phipps, in whose arm a little vaccine virus was inserted, taken from the hand of a young woman who had been accidentally infected by a cow. Notwithstanding the resemblance which the pustule, thus excited on the boy's arm, bore to variolous inoculation, yet, as the indisposition attending it was barely perceptible, I could scarcely persuade myself the patient was secure from

e small-pox. However, on his being inoculated some months afterwards, proved that he was secure. This case inspired me with confidence; and soon as I could again furnish myself with virus from the cow, I made arrangement for a series of inoculations. A number of children were culated in succession, one from the other; and, after several months l elapsed, they were exposed to the infection of the small-pox—some by culation, others by variolous effluvia, and some in both ways; but they resisted it. The result of these trials gradually led me into a wider d of experiment, which I went over not only with great attention, but h painful solicitude. This became universally known through a treatise blished in June, 1798. The result of my further experience was also ught forward in subsequent publications, in the two succeeding years, 9 and 1800. The distrust and scepticism which naturally arose in the ds of medical men, on my first announcing so unexpected a discovery, now nearly disappeared. Many hundreds of them, from actual exence, have given their attestations that the inoculated cow-pox proves rfect security against the small-pox; and I shall probably be within pass if I say thousands are ready to follow their example; for the e that this inoculation has now taken is immense. An hundred thou- persons, upon the smallest computation, have been inoculated in these ns. The numbers who have partaken of its benefits throughout Eu-, and other parts of the globe, are incalculable; and it now becomes manifest to admit of controversy, that the annihilation of the small- the most dreadful scourge of the human species, must be the final t of this practice."—[*The Medical Repository, vol. v., p.* 239, *New York,*]

JENNER'S INSTRUCTIONS FOR VACCINE INOCULATION.

the vaccine fluid be taken for the purpose of inoculation from a pushat is making its progress regularly, and which possesses the true ne character, on any day from the fifth to the eighth, or even a day or ter, provided the efflorescence be not formed around it. When the scence is formed, it is always most prudent to desist from taking any of the virus from the pustule.

obtain the virus, let the edges of the pustule be gently punctured lancet in several points. It will gradually ooze out, and should be ed upon the arm, about midway between the shoulder and the elbow, by means of a very slight scratch, not exceeding the eighth part of h, or a very small oblique puncture.

ttle red spot will appear on the third day, if the operation succeed, on the fourth or fifth, becomes perceptibly vesicated. It goes on sing till the tenth day, when it is generally surrounded by a rose coefflorescence, which remains nearly stationary for a day or two. lorescence then fades away, and the pustule is gradually converted hard glossy scab, of a dark mahogany color. These progressive of the pustule are commonly completed in sixteen or seventeen days.

gle pustule is sufficient to secure the constitution from the smallit as we are not always certain the puncture may take effect, it will dent to inoculate in both arms, or to make two punctures in the rm, about an inch and an half asunder, except in very early inwhen there is a great susceptibility of local irritation.

If the efflorescence surrounding the pustule should be extensive, and occasion much local heat upon the arm, it may be cooled by the repeated application of pieces of folded linen dipped in cold water, or still more expeditiously by a strong solution of the *aqua lythargyri acetati** in water, an ounce, for example, of the former in five or six of the latter.

If the scab should at any time be prematurely rubbed off, the party may be occasionally touched with undiluted *aqua lythargyri acetati.*

Vaccine virus, taken from a pustule, and inserted immediately in its fluid state, is preferable to that which has been previously dried; but as it is not always practicable to obtain it in this state, we are compelled to seek for some mode of preserving it. Various means have been suggested, but from the test of long experience it may be asserted, that preserving it between two plates of glass is the most eligible. Let a piece of common window glass be cut into squares of about an inch each, so that they shall lie smooth when placed upon each other. Let the collected vaccine fluid be confined to a small spot (about the size of a split pea) upon the centre of one of these glasses; which should be suffered to dry in the common heat of the atmosphere, without exposure to the heat of fire or the sun. When dry, it should be immediately secured by placing over it the other piece of glass. Nothing more is necessary for its preservation than wrapping it in clean writing paper.

The virus thus preserved, when wanted for the purpose of inoculation, may easily be restored to its fluid state by dissolving it in a small portion of cold water, taken upon the point of a lancet. It may be used in the same manner as when just taken from a pustule.

The vaccine fluid is liable, from causes apparently trifling, to undergo a decomposition. In this state it sometimes produces what has been denominated the spurious pustule; that is, a pustule, or an appearance on the arm not possessing the characteristic marks of the genuine pustule. Anomalies, assuming different forms, may be excited, according to the qualities of the virus applied, or the state of the person inoculated; but by far the most frequent variety, or deviation from the perfect pustule, is that which arrives at maturity, and finishes its progress much within the time limited by the true. Its commencement is marked by a troublesome itching; and it throws out a premature efflorescence, sometimes extensive, but seldom circumscribed, or of so vivid a tint as that which surrounds the pustule completely organized; and (which is more characteristic of its degeneracy than the other symptoms) it appears more like a common festering produced by a thorn, or any other small extraneous body sticking in the skin, than a pustule excited by the vaccine virus. It is generally of a straw color, and when punctured, instead of that colorless, transparent fluid of the perfect pustule, its contents are found to be opaque. That deviation from the common character of the pustule, arising from vaccine virus which has been previously exposed to a degree of heat capable of decomposing it, is very different. In this instance it begins with a creeping scab, of a pale brown or amber color, making a long and slow progress, and sometimes going through its course without any perceptible efflorescence. Its edges are commonly elevated, and afford on being punctured a liquid fluid.

A little practice in vaccine inoculation, attentively conducted, impresses on the mind the perfect character of the vaccine pustule; therefore, when a deviation arises, of whatever kind it may be, common prudence points out the necessity of reinoculation; first with vaccine virus of the most

*Goulard's Extract of Saturn.

ctive kind; and, secondly, should this be ineffectual, with variolous virus. ut if the constitution shows an insusceptibility of one, it commonly does the other.

When any constitutional symptoms occur in inoculated cow-pox, they are mmonly first perceptible (especially in children) on the fourth or fifth y. They appear again, and sometimes in adults, not unlike a mild at- ck from inoculated small-pox, on the eighth, ninth, or tenth day. The rmer arise from the general effects of the virus on the habit, the latter om the irritation of the pustule.

If the effluvia of the small-pox have been received into the habit, pre- ously to the inoculation of the vaccine virus, the vaccine inoculation will t always be found to stop its progress, although the pustule may make its vances without interruption.

The lancet used for the inoculation should always be perfectly clean. ter each puncture, it is proper to dip it into water, and wipe it dry.

The preservation of vaccine virus upon a lancet beyond the period of a days, should never be attempted; as it is apt to produce rust, which decompose it.—*The Medical Repository, Vol. v; New York*, 1802; *page* 4.

EDWARD JENNER.

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hortly after the discovery of Dr. Jenner had attracted public attention, George Pearson rendered service to the cause of vaccination by es- ishing an extensive correspondence with medical men in different parts England, by which he was enabled to prove that cow-pox was much e widely epizöotic than had been at first believed; and that all the traditions fully confirmed Dr. Jenner's positions.

e early letters of Dr. Pearson indicated not less ardor in behalf of ination than respect and admiration for its author.

. Jenner amply repaid the good will of his correspondent by the unreserved communication of all the knowledge which he possessed. the eighth of November, 1798, and just on the eve of the publication s pamphlet, Dr. George Pearson wrote a letter to Dr. Jenner which, g other matter, contained the following expression: "Your name will in the memory of mankind as long as men possess gratitude for ces and respect for benefactors; and if I can get *matter* I am much ken, if I do not make your live for ever."

out the middle of November, 1798, Dr. Pearson published his inquiry rning the history of the cow-pox, and thus announced its appearance . Jenner.

DR. PEARSON TO DR. JENNER.

Dear Sir—Unexpectedly my pamphlet made its public appearance a day or two I am sorry to trouble you to say by what conveyance I can send you a copy, and t place? If you have any commissions to execute in London, you may as well parcel made up, and I will see it forwarded. I observe several errors since print- rtly mine and partly those of the printer; but I know other authors discover errors, and that readers do not perceive them.

can not imagine how fastidious the people are with regard to this business of the x; one says it is very filthy and nasty to derive it from the sore heel of horses; , O, my God, we shall introduce the diseases of animals among us, and we have y already of our own!

A third sapient set say it is a strange, odd kind of business, and they know not what to think of it. All this I hear very quietly, and recollect that a still more unfavorable reception was experienced by the inoculation of the small-pox.

I wish you could secure for me matter for inoculation, because, depend upon it, a thousand inaccurate, but imposing cases, will be published against the specific nature of the disease by persons who want to send their names abroad about any thing, and who will think yourself and me fair game. By way of *Le defendendo* we must inoculate. I have thought it right to publish the evidence as sent to me, and also my own reasoning, because I know you are too good a philosopher to be offended at the investigation of truth, although the conclusions may be different from your own. I think, too, your principal facts will be the better established than if it had happened that I had uniformly acceded to all your doctrine.

I am, with Mrs. P's best compliments to Mrs. Jenner and yourself,

Your obedient servant,

G. PEARSON,

Leicester Square, November 13, 1798.

During my visit to Europe, in 1870, I succeeded, after a careful search, in obtaining in London, a single copy of the work of Dr. George Pearson, and also of the work of Dr. Woodville, and we conceive it of importance to the medical profession of America, that they should be reproduced in connection with the works of Dr. Jenner, which are so fully sustained by the facts illustrating the history of the cow-pox.

AN INQUIRY

CONCERNING

THE HISTORY

OF THE

COW-POX,

PRINCIPALLY WITH A VIEW TO

SUPERSEDE AND EXTINGUISH

THE

SMALL-POX,

GEORGE PEARSON, M. D. F. R. S.

PHYSICIAN TO ST. GEORGE'S HOSPITAL; OF THE COLLEGE OF PHYSICIANS.

FELICIORES INSERIT.—*Hor.*

LONDON:

Printed for J. Johnson, No. 72, St. Paul's Church Yard.

1798.

d often seen the disease in Wiltshire and Gloucestershire. The milkers, he said, were sometimes so ill, to lie in bed for several days, and there was a fever at the beginning, as in the small-pox, but that no e ever died of it. He had known many persons who had laboured under the cow-pox, but who had- ver suffered the small-pox, although it prevailed in their own families; except in one instance in which was told that the person who took the small-pox, had gone through the cow-pox when a child. The me servant said it was a common opinion, that people who have been affected with the cow-pox, to use own words, are "hard to take the small-pox."

Mr. Francis, who keeps a farm for milch cows on the road to Somers' Town, had seen the disease several es in the autumn among his cattle, and he knew that it was very apt to produce painful sores on the kers; but he had never heard, or observed, that it prevented persons from having the small-pox.

He said that three years ago, in the spring, the disease prevailed at several farms on the New Road.

male servant of Mr Francis, who has a good understanding, and is a man of veracity, and had lived in y farms all his life, stated, "that he had seen the cow-pox thirty-five years ago at King's Wood, in mersetshire, and frequently there, and in London since that time. The disease, he said was then vul- rly called ths cow-pox; it appeared on the teats and udders with fiery or flame like eruptions—was very ctious among the cows and the milkers; but never knew either human creature, or beast die of it. It cts the hands and arms of the milkers with painful sores, as large as a sixpence, which last for a month more, so as to disable the sufferers from continuing their employment. The disease breaks out especially the spring, but occasionally at other times of the year. Most of the cows in his master's, Mr, Francis; n, were infected three years ago in the spring at which times many of the milkers were also infected- ew cow is very liable to take the disease. He had always understood that a person who had had the cow' could not take the small-pox, and never knew in the course of his life an instance of the small-pox in n persons.

he following instances fell under his own observation: a fellow male and a female servant were affected the cow-pox; some time after this, the parish in which they lived were in general inoculated for the ll-pox, but these two persons, who had never labored under the small-pox, could not be infected with disease; nor did they take it, although they subsequently lived with their children while they were ring the small-pox. He also believed, and it was a common opinion in many parts of the country, persons who have undergone the small-pox cannot take the cow pox. He himself labored under the ulated small-pox when seventeen years of age, but never took the cow-pox, although he had milked a t number of cows laboring under the disease. He had never known either a human creature, or cow the disease more than once. He had the measles previously to the small-pox, as well as the hooping gh.

some other farms, near London, where milch cows are kept, I found the disorder was not known either e masters, or servants.

. Haygarth very kindly wrote me a letter from Bath, on the 30th of August last, in which he says, none of your questions, concerning the cow-pox, can I give any answer from my own knowledge. Of a distemper, I never heard among the Cheshire, or Welsh farmers. My first intelligence upon this ct came from my friend, Dr. Worthington, of Ross, some time ago. He, as well as another friend, Dr. val, speak very favorably of Dr. Jenner, on whose testimony the extraordinary facts he has published sent principally depend."

el most sensibly the great favor shown to me by Professor Wall, of Oxford. Although this gentle- s zeal and ability in promoting useful inquiries are acknowledged, I cannot but attribute the great which he bestowed to procure answers to my queries in so short a time as I required, in part, to the lship founded in the days of academical studies; to use this amiable gentleman's own words—"those of free, manly, and liberal conversation which I reflect on with infinite pleasure.

information belonging to this place, from Professor Wall,* is the answer to the question, whether is sufficient evidence that the small-pox cannot infect a person who has once had the cow-pox, at- l with fever; and if there has been a local affection without fever, is such person still capable of tak- e small-pox?

ceive but one answer to the two different modes of the question, which is, that any person who has ad the cow-pox, has never been known to have the small-pox."

rvant who has kept the cows of a considerable dairy-farm in this neighborhood a great many years. e that he had the cow-pox early in life. Yet about six or seven years ago he wished, for security, noculated for the small-pox—the operation was performed three several times, but no disorder nor on ensued—the Surgeon, a gentleman of great eminence in this place, asked him if he had ever had w-pox; upon his answering yes, the Surgeon replied. Then it is useless to make any farther trial. ervant, the next year, had several children inoculated by Sutton. He was with them all the time till recovery, but did not receive the infection. A servant-girl at another considerable farm, told me d the cow-pox early in life; several years after she was inoculated, but nothing took place, except pearance of red blush round the incision similar, I suppose, to what Dr. Jenner mentions.

red suffusion has been hastily, by some inoculators, regarded as a proof, that the system has been d with the virus of the small-pox; but neither this appearance, nor even a much more considerable on of the arm is always sufficient security against future infection, unless, there has been some erup- See Memoirs of the Medical Society."

Mr. Dolling, an Inoculator at Blandford, I have received important intelligence, for which I am further obligations to the Rev. Herman Drewe.† "Mr. Dolling has inoculated for the small pox a umber of persons, who said they had been affected with the cow-pox, and very few of them took the on, to produce the small-pox, and he is of opinion that those who took the small-pox, were mistaken posing they had really labored under the cow-pox. In one family five out of seven children took the x, by handling the teats of a cow affected with the cow-pox; these seven children were inoculated small-pox, but none took the infection, except the two who had not labored under the cow-pox. roft tells me, that in Staffordshire, to his knowledge, the fact has been long known, of the cow-pox, revails in that county, affording an exemption of the human subject from the small-pox. This gen- affords me an unequivocal proof of his conviction of the safety and efficacy of the inoculated cow- his application to me for matter, in order to inoculate one of his own children.

onorable friend, Mr. Edward Howard, has been assured on very good authority, that of a relation, an officer in the Oxfordshire Militia, that it is a received opinion among the soldiers, that it is un- ry to be inoculated for the small-pox, if they have already labored under the cow-pox, as many of ave done.

edfearn of Lynn; informs me, that "the cow-pox is a common disease among the cattle in this part, farmers have made use of the appellation cow-pox for near thirty years, although totally ignorant isease existing in the West of England." But,

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r. Wall's Letter, Oxford, September 3, 1798.
Rev. H. Drewe's Second Letter, September 17, 1798.
edfearn's Letter, September 15 1798.

Dr. Alderson, of Norwich* acquaints me, that there is reason to believe the disease is not known in his neighborhood.

My correspondents in the North and East Ridings of Yorkshire, in Durham, in Lincolnshire, and in the neighborhood of Windsor, acquaint me that the cow-pox is not known in those parts. But from the success which I have had in discovering the disease, by making a strict inquiry in farms, where it was believed not to exist, I can scarce doubt that it breaks out occasionally in every part, where a number of cows are kept, and that the infection is widely disseminated

I do not find that the cow-pox is known in Lancashire. Dr. Currie,† of Liverpool, obligingly answers my letter; he says, 'I have made inquiries among the farmers, but I have not been able to find one who is acquainted with the disease. Of course I cannot answer any of your queries. My friend, Dr. Percival, of Manchester, who is now here, never heard of the cow-pox in this county, any more than myself."

II. Person who have been affected with the specific fever, and peculiar local disease, by inoculation of the cow-pox infection, who had not previously, undergone the small-pox, are thereby rendered unsusceptible of the small-pox.

The first set of evidences of this fact are those of Dr. Jenner, in the cases xvii, xix, xx, xxi, xxii, xxiii. They are instances of inoculation of the cow-pox as in the small-pox, with matter taken from the teats of cows. A fever like that of the small-pox arose in six to nine days after the incision, but scarce of more than twenty-four hours, duration; attended with an inflammatory appearance, or erythematous efflorescence around the parts inoculated, and postulous sores of those parts; which do not suppurate, but remain limpid till they disappear; and there is no eruption of other parts of the skin, as in the small-pox.

In the cases of inoculation under Dr. Jenner, the local affection was commonly as slight as in the inoculated small-pox, but sometimes there appeared a disposition to a more extensive inflammation of the skin around the parts in which the matter was inserted. "It seemed to arise from the state of the pustule which spread out accompanied with some degree of pain, to about half the diameter of a sixpence. By the application of mercurial ointment to the inflamed parts, (as is practised in the inoculated small pox) the complaint soon subsided. To prevent inflammation of the skin, caustic was also applied to the vesicle of the inoculated part, to excite a different kind of inflammation; but the precaution was perhaps unnecessary as a third patient had nothing applied, and the arm scabbed quickly, without any erysipelas.

One of these patients inoculated with the cow-pox was only six months old, and who took the disease. In none of the above cases, after the cow-pox; could the small-pox be excited, by repeated inoculation. The confidence of Dr Jenner, in the safety and efficacy of the inoculation of the cow-pox is unequivocally declared by the inoculation of his own son, R. F. Jenner, aged elevenmonths; although the poison did not take effect in this instance. The project of inoculation of the cow-pox occurred to other practioners antecedently to Dr. Jenner's experiments.

Mr. Drewe, in his letter above cited, speaks of the practice. He says, "Mr. Bragge and I endeavored to try the experiment of inoculating with the matter of the cow-pox, but from the scarceness of the disease and unwillingness of patients, we were disappointed."

Mr. Pulteney informs me, that "a very respectable practioner acquainted him that of seven children whom he had inoculated for the small-pox, five had been previously infected with the cow-pox purposely, being made to handle the teats and udders of infected cows; in consequence of which, they suffered the distemper. These five, after inoculation for the small pox, did not sicken; the other two took the distemper."

Farther, "A farmer in this country inoculated his wife and children with matter taken from the teat of a cow. At the end of a week the arms inflamed, and the patients were so far affected, as to alarm the farmer although unnecessarily, and incline him to call in medical assistance. They all soon got well, and were afterwards inoculated for the small-pox, but no disease followed. I was not applied to in this case, but the fact is sufficiently ascertained."

Mr. Downe furnishes me‡ with important information on the present fact. "R. F. near Bridport, who about twenty years of age, was at a farm house when the dairy was infected with the cow-pox. It being suggested to him that it would be the means of preserving him from the small-pox, which he had never taken, if he would submit to be inoculated with the cow-pox; he gave his consent; he was infected in two or three places in his hand with a needle. He felt no inconvenience till about a week, when the part began to inflame, and his hand to swell, his head to ach, and many other symptoms of fever came on. He was recommended to keep much in the open air, which he did, and in four or five days the symptoms of fever went off, as the maturation of the hand advanced. The parts soon healed, leaving permanent scars. He was afterwards inoculated twice by my grand-father, and a considerable time after twice by my father, but without any other effect than a slight irritation of the part, such as is occasioned in the arms of persons who have already had the small-pox. It was not expected at the time, that the small-pox poison would be effectual, but it was inserted, partly by way of experiment, and partly by way of precaution, the small-pox being then in the family. The small-pox has been repeated since in his own family, and he never avoided being confident that it was not possible to infect him with this disease, The next case by Mr. Downe, although it affords defective evidence, is not useless. "I have lately conversed with a person who was inoculated in the hand with the cow-pox matter. The wounds apparently healed for a time, and then inflamed. He had a swelling in the axilla, pain in the head, sickness, and slight fever. No eruption took place, but there was much maturation at the place of insertion, and considerable scars remain."

Next hear what Professer Wall says in his answer to the question, "Whether the disease has been communicated by inoculation, and whether it has produced a milder or more severe disease than in the casual way?"

"I have‖ not yet learnt that this disorder has, in this part of the country, ever been propagated by inoculation designedly. It has been communicated to persons who have had slight wounds from thorns, and sions of the skin from other causes, perhaps more readily than in the common way; but it has not peared that the character or severity of the disorder has been altered by this circumstance."

Mr. Dolling,§ of Blandford, communicates the following: "Mr. Justings of Axminster inoculated wife and children with matter taken from the teats of a cow that had the cow-pox; in about a week inoculation, their arms were very much inflamed, and the patients were so ill, that the medical assistance of Mr. Meach, of Cerne, was called for. The patients did well. They were afterwards inoculated for small-pox by Mr. Trobridge, without effect.

*Dr Alderson's Letter, Norwich. September 16, 1798.
†Dr. Currie's Letter, Liverpool, September 8, 1796.
‡See Mr. Downe's Letter of August 25, 1798.
‖Professor Wall's Letter, above cited.
§Mr. Drewe's Second Letter, above cited.

III. The disease produced by inoculating with the matter of the cow-pox, does not ffer from the disease produced by inoculation with the matter from the human animal; r is any difference observed in the effects of the matter from the first human subject fected from the brute animal, or from the matter generated successively, in the second, ird, fourth, or fifth human creature from its origin in the brute.

This important fact, at present, is only supported by the instance related by Dr. Jenner, in the cases xix xxiii, p. 37 to 44. Hence, according to these instances, the poison of the cow-pox has the same properties. appears from its effects on the human constitution, whether it be generated by the cow, or by the human mal; and these properties are the same, however remote from the origin of the poison in the cow. But as not been determined by inoculating the teats of cows with the matter taken from the cow, and with t taken from the human creature; that the properties of the poison from this latter source are the same h regard to the brute, as those of the matter from the cow with regard to the same animal.

apprehend that the cow-pox is the only example at present known, of a permanent specific infectious ease in the human constitution, produced by matter from a different species of animal; but it has been en conjectured, that many of the infectious diseases of the human species are derived from brutes.

IV. A person having been affected with the specific fever, and local disease, produced the cow-pox poison, is liable to be again affected as before by the same poison; and such person is not susceptible of the small-pox.

find that most part of professional men are extremely reluctant in yielding their assent to this fact. e, indeed, reject it in the most unqualified terms. They are not averse from admitting the evidence, t the cow-pox may affect the same constitution repeatedly; or even that a person having had this disease, nsusceptible of the small-pox; but that the constitution having suffered the cow-pox, should still be ceptible of this disease, and not be susceptible of the small-pox, is an assertion with regard to which demur to acquiesce. The unfavorable reception of the evidence for this fact does not seem to arise so h from the observations in support of it, being suspected to be inaccurate, or sufficiently full and com- e, as from its appearing, as they say, absurd and inconceivable. On inquiring why the fact appears in light, we find it is because there is no support from any other analogous fact. There is, in reality, no logous fact. We have facts which show that a person having undergone certain diseases, occasioned particular poisons, in some instances is, and in others is not, again susceptible of the same disease, by same poison; but the instance before us is the first which has been observed of the constitution being, dered inexcitable to a disease, from a given morbid poison, by having suffered a different disease n another different poison, and yet it remains suspectible of this different disease by given morbid poison. In the firsl instance of certain new facts, it is easy to conceive that there be no analogous fact to the one discovered. When the small-pox first broke out, on its being discovered the same constitution could not undergo this disease a second time, no analogous fact was, I think, n known; and on that account it probably was not admitted without much hesitation. But on a subse- nt discovery that the same constitution could not be infected more than once with the measles, this, well as the former fact, readily found acceptance. An evidence for a fact ought not to be rejected, use it is incomprehensible or inconsistent with what is already known; but on the present occasion, if subject be well considered, it does not seem to be difficult to conceive that a change may be effected in human constitution, by a disease from a morbid poison, so as to render such constitution unsusceptible disease from a given different morbid poison, and yet such constitution shall remain susceptible of the er disease, from the former morbid poison. Hence, I apprehend, the only just ground of objection h may be taken, is that of the observations on the authority of which the fact is said to be established, us then state the evidence.

nder Case ix. p. 21, Dr. Jenner relates the history of a person who was first affected with the cow-pox e year 1780, a second time in 1791, and a third time in 1794. "The disease was equally severe the second third time as it was the first," which is, in general, other wise both in the brute and human kind. Inoc- on of the variolous poison was twice instituted in this patie t, but without producing disease, nor l the patient be infected by association with persons laboring under the small-pox.

nother patient (see Jenner, p 51.) suffered the cow-pox in 1759; in 1797 he was inoculated with the olous poison, but without exciting the disease. In 1798 the cow-pox again took place

ith respect to the information which I have gained by my inquiries, concerning this fact; some of my espondents observed, that the cow-pox occurred so seldom among the human kind, that they had no rvations to determine, whether a person could undergo the disease more than once; the greater part of orrespondents ventured to say, that it had never been seen more then once in the same person; but testified that the cow-pox certainly does take place, repeatedly, in the same constitution.

. Woodman, of Aylesbury,* says, "the cow-pox does not supersede itself on future occasions, for that boys have it repeatedly."

may be worth while to notice, that none of the gentlemen of whom I made inquiries, knew an instance e disease attacking the same cow more than once; and it was said that it was the current opinion this was a fact.

e evidence for this fact, to my apprehension, only proves, satisfactorily, that the local affection of the ox may occur in the same person more than once; but whether the peculiar fever also occurs more once in the same person, from the cow-pox poison, does not appear certain; and must be determined ture observations, to be made with a particular view to this point. Future observations must likewise rmine, whether, in those cases, (if such occur) in which a person, after having gone through the cow- takes the small-pox the cow-pox was attended with the fever, or was merely a local affection. It seems y well ascertained, that the variolous poison may produce the small-pox only locally, or without any ion of the constitution; and in such a case, the constitution is still susceptible of the small-pox, and n both cases, viz: of the local affection only, and of the whole constitution, the matter of the eruptions able of infecting others, so as to produce the small-pox: either locally only, or also in the whole con- tion. Hence it seems probable, that similar local and general effects may be produced by the cow-pox n, and not only in the human kind, but in cows. I acknowledge, however, that the case, p 51. in er's book, militates against this supposition.

A person is susceptible of the cow-pox, who has antecedently been affected with small-pox.

* See Mr. Smith's Letter, above cited.

Dr. Jenner, pp. 15-19, gives some instances of persons taking the cow-pox who had certainly gone through the small-pox. But he says, "It is a fact so well known among our dairy farmers, that those who have had the small-pox either escape the cow-pox or are disposed to have it slightly; that as soon as the complaint shows itself among the cattle, assistants are procured, if possible, who are thus rendered less susceptible of it, otherwise the business of the farm could scarcely go forward."

I have not got much additional information on this fact. It seems, however, sufficiently authenticated that people may have the cow-pox after they have had the small-pox, but it will require more nice attention to satisfy the query whether, in such cases, the cow-pox affects the whole constitution or is only a local affection?

Mr. Downe*, in particular, speaks of a family who did not take the cow-pox when much exposed to the infliction, because they had all gone through the small-pox, except one who had been afflicted already with the cow-pox. I met with a servant at Mr. Rhodes' farm, on the Hampstead Road, who attested that he had suffered the cow-pox fourteen years ago, but that long before that time he had gone through the small-pox.

Professor Wall† says: "The answer to the question whether a person is capable of taking the cow-pox who has gone through the small-pox, is of some decidedly that such a person is not liable to the infection of the cow-pox. Others of equal experience have answered this question with doubt."

At Mr. Rhodes' farm, at Islington, I found that one of the male servants who had been long employed in taking care of milk cows in the environs of London, distinguished the cow-pox very clearly from common inflammation of the teats with scabs, with which several cows were at the time that I saw this man affected. He had never contracted the cow-pox, although he had been repeatedly exposed to the infection, and when others took it. He was deeply pitted with the small-pox, which he labored under when a young child.

VI. The cow-pox is not communicated in the state of effluvia or gas, nor by adhering to the skin in an imperceptably small quantity, nor scarce, unless it be applied to divisions of the skin by abrasions, punctures, wounds, etc.

Some morbific poisons are communicated to animals only in the state of invisible effluvia or gas, e. g. the miasmata which produced intermittent fevers; the contagion which produces the ulcerous sore throat, that which occasions the whooping-cough, the measles, etc. Other morbific poisons are communicated both in the state of effluvia and in a palpable or visible quantity, e. g. the variolous poison, the matter which produces in oxen, the murrain or loose bovilla, etc. Others again are not propagated in the state of effluvia or gas, but in a palpable or visible quantity only, as the hydrophobic poison, the syphilitic, etc., and to these last must now be added the morbific poison of the cow-pox.

It does not appear that the disease spreads from any infected cow among other cows which are fed in the same stable like a contagious disease. Persons who sleep in the same bed with one who is laboring with the cow-pox are not in this way liable to be infected. (See Jenner, pp. 68, 69.) It is not even propagated from the cows to the milkers for the most part, unless the skin of the part of the hands to which the matter is applied be divided.

This property of the cow-pox infection not being propagated so as to produce disease, but by contact and then only when applied in a palpable or visible quantity, and also scarce unless the skin be divided, is the most important one. Yet a few instances I apprehend will suffice to show clearly under what circumstances the cow-pox infliction produces disease.

A boy who was inoculated for the cow-pox slept, while he was laboring under the disease, with two other boys, but neither of them by this exposure to the affliction got the cow-pox. A young woman who had the cow-pox, with several sores, which maturated to a great extent, slept in the same bed with a fellow dairy maid who never had been inflicted either with the cow-pox or small-pox, but the disease was not communicated. A young woman, on whose hands were several large suppurations from the cow-pox, was a daily nurse to an infant, but the infant was uninfected. (See Jenner, pp. 68-69.)

I am instructed uniformly by my correspondents that the cow-pox arises only from matter evidently applied most frequently by friction of the diseased teats in milking, but sometimes from the matter lodging accidentally in some soft part, yet even under the circumstance it frequently fails to infect unless there be a cut, scratch, puncture, etc., of the hands.

Mr. Drewe mentions the instance of a woman who lost her eyesight in consequence of the infectious matter being heedlessly applied to the eye, and that the cow-pox has been observed to take place from handling the milk pail on which the infectious matter has been incautiously allowed to remain.

VII. The local affection in the cow-pox produced in the casual way is generally more severe and of longer duration than usually happens in the local afflictions in the inoculated small-pox, but in the cow-pox the fever is in no case attended with symptoms which denote danger, nor has it in any instance been known to prove mortal.

The cow-pox in the incidental way, for sufficiently obvious reasons, most commonly affects the palms of the hands. There is a wide difference in the degree of a local affection. I am instructed by my communications that the extreme cases are, firstly, those in which the patients are inflicted with so much pain, inflammation as to be confined to their beds for several days, and have painful phagedenic sores for several months. Secondly, those cases which are so slight that the patients are not confined at all, but get well in a week or ten days. In the more severe cases, in which the inflamed spots become vesicular with edges, the pustules more elevated than the cuticle, and of a *bluish* or a *purple color*: there are pains of the axilla, fever and now and then a little delirium.

These symptoms continue from one to three or four days, leaving ulcerated sores about the hands, which from the sensibility of the parts, are very troublesome, and commonly heal slowly, frequently becoming phagedenic, like those from which they sprung. The lips, nostrils, eyelids and other parts of the body are sometimes affected with sores, but these evidently arise from their being heedlessly rubbed or scratched with the patient's inflicted fingers. Dr. Jenner considers the *bluish* or *livid* tint of the pustules to be characteristic of the cow-pox. P. 5.

Mr. Drewe's information on the fact is, "That the symptoms are similar to the small-pox, but less rio... The pustules are only about the hands, in the parts which have been in contact with the infected tea...

*Mr. Downe's letter of August 30.

†Letter of Professor Wall, above cited.

t in answer to the question whether on the whole the cow-pox is a disease of less magnitude than the all-pox by inoculation, he says: "When I consider what a slight disorder the inoculated small-pox is, will not, in my humble opinion, admit of comparison."

Mr. Dolling says: "There is a swelling under the arm, chilly fits, etc., not different from symptoms o f breeding of the small-pox. After the usual time of sickening, namely, two or three days, there is a ge ulcer, not unlike a carbuncle, which discharges matter."

Dr. Pulteney's account of the symptoms is in these terms: "A soreness and swelling of the axillary nds as under inoculation for the small-pox, then chilliness and rigors and fevers as in the small-pox. o or three days afterwards, abscesses, not unlike carbuncles, appear generally on the hands and arms. ich ulcerate and discharge much matter."

Mr. Downe, speaking to this point, says: "The symptoms, as far as could be ascertained in the cow , were similar to those of the small-pox, but I never heard of any who had them in any degree alarm- ." Again, "the symptoms are exactly similar to those of the small-pox by inoculation, when of the most orable kind. The disease generally disappears in about the same time that the small-pox does."

Mr. Giffard tells me that "he never heard of either men or cows dying of the cow-pox."

Mr. Woodman (see Mr. Smith's letter) testifies that he never observed symptoms worthy to be called er; there was merely "feverish heat when the pain was considerable."

Dr. DeSalis observes that one of the persons affected with the cow-pox "was much struck with the re- mblance to the symptoms he had lately experienced in the small-pox."

Professor Wall's information is that "the milkers have the disorder only once, generally with preceding er, sometimes very violent, sometimes more mild." "No human creature, or cow, has been known to be danger, or to die of the cow-pox." After a strict inquiry at the milk farms adjoining to London, I could find that any person had died of the cow-pox.

With respect to the animals from which the human creature derives the disease, it is known only to effect rs. They have, sometimes, but it is very seldom observed, a disorder of the whole constitution, "the retion of milk being much lessened." The local affection appears with irregular pustules on the nip- s. "At their first appearance they are commonly of a *palish blue*, or, rather, of a color somewhat ap- aching *livid*, and are surrounded by an erysipelas inflammation. These pustules, unless a timely rem- be applied, frequently degenerate into phagedenic ulcers, which prove extremely troublesome. (See ner, pp. 3 and 4.)

Mr. Pulteney acquaints us, that "the disease makes its appearance on the udder of the cow, and affects teats principally, which inflame, then ulcerate, discharging a bloody matter; *but it does not appear that disease is more local, as the cows seem not to be out of health in other respects.*"

From Dr. Drewe's testimony, however, it appears that the whole constitution of the cow is affected: ere being "loss of appetite and of milk," as well as "ulcerated teats," so as to render the animal, in e cases, totally unfit for the dairy. "It is infectious in the herd, and the infection is probably con- ed by the person's hands that milks them."

Mr. Downe's information, relating to the present part of our inquiry, is that "the only symptoms were ptions about the teats of the cow, exactly similar to the small-pox, which gradually become sore, and off; and the infection was soon communicated to a whole dairy, as was supposed by the hand of the son who milked. The animals suffered much in the operation of milking."

Professor Wall mentions that the symptoms are "blue or livid blotches on the teats and udder, painful suppurating. The cows are seldom ill, so as to refuse their food. Others observe, that cows being urally disposed to a lax habit of body, are not so much afflicted with feverish symptoms. Some say s suffer no fever at all."

The testimony of several other correspondents have been already stated, that a cow has never been wn to die of the cow-pox; to which I add in confirmation, that of the milk farmers near London.

VIII. No consequential disease, which should be attributed to the cow-pox has been erved; nor has any disease been excited, to which there previously existed a disposi- n; nor has it been discovered to produce a predisposition to particular diseases.

Although a considerable body of evidence might be stated in confirmation of these momentous facts, from experience of Dr. Jenner, and the uniform testimony of my correspondent; and although we should inclined to conclude in favor of these facts, from the consideration of the nature of the cow-pox, as far et known, yet it does not appear to my judgment that the observations and arguments warrant more conclusions on the side of great probability. A number of persons, many hundreds, have gone ugh the inoculated small-pox; yet no one doubts that, in a certain proportion of instances, disease has excited and disposition to disease been produced.

are led then to think that a greater number, and more accurate observations are wanting, to author- positive conclusions relating to the facts stated under this VIII head.

X. The cow-pox infection may produce the peculiar local disease belonging to it, but hout the difference of the constitution; in which case, the constitution is liable to be ected by the small-pox infection.

his fact is not of small consequence either in respect of general pathology or practice. Dr. Jenner's k, p 71, furnishes us with an unequivocal example of this fact. A woman was affected with the disease of the cow-pox in the ordinary way, but without any pains or swelling of the axilla, or any rder of the whole constitution, this person was subsequently afflicted by the small-pox: but a fellow- ant who had suffered with the cow pox, (at the same time and from the same source of infectious ter,) in which there was fever as well as local disease, could not be infected by inserting the small-pox n; even repeated trials for this purpose were successless. Hence, they who offer as evidence in- ces of persons taking the small-pox after they have gone through the cow-pox, will do well to assure selves that the whole constitution was affected in the cow-pox, otherwise such evidence will be inad- ible. Analogous facts have been ascertained, on good authority in the small-pox, although the in- ces are too scarce to afford too scrupulous minds full proof. It has been found that the usual loca

disease of the inoculated small pox may occur, unattended by a disorder of the whole constitution; but yet the matter of such local small-pox will, in other persons, produce not only the local disease, but general eruption and fever; and that the person who had undergone this local small-pox only, will be infected at a future time, so as to have both the ordinary local disease and fever of the small-pox with eruptions.

It appears from the observations of Dr. Jenner, page 50, Mr. Drewe, Dr. Pulteney, and others, that during the cow-pox in the human subject, inflammation and sores are apt to be excited by the matter being lodged upon various parts, especially if the skin be divided; but no mention is made of fresh fever being excited nor of the peculiar *livid* and *bluish* tint of the cow-pox pustulous sores. Enough has been said in a preceding part of this paper to direct observers in future to ascertain more accurately the effects of the agency of the cow-pox infection on the whole constitution, and on part of it only.

It will be necessary also to caution inquirers against the errors of admitting facts to belong to the cow-pox, as understood in this paper, which, in reality, belong to the chicken-pox, or swine-pox, in some provincial situations, are designated by the name of the cow-pox.

Yet another caution is necessary in investigating the truth, namely, to distinguish from the cow-pox, "the pustulous sores which appear spontaneously on the nipples of the cows; and instances have occurred, although very rarely, of the hands of the servants employed in milking being affected with sores in consequence, and even of their feeling an indisposition from absorption. These pustules are of a much milder nature than those which arise from that contagion, which constitutes the true cow-pox. They are always free from the bluish or livid tint so conspicuous in the pustules in that disease. No erysipelas attends them, nor do they show any phagedenic disposition, as in the other case; but quickly terminate in a scab, without creating any apparent disorder in the cow." Like the cow-pox, "this eruption appears most commonly in the spring, when the cows are first taken from their winter food, and fed with grass. Jenner, p. 7.

I observed during my visits to the cow stables near London, in August and September last, that a number of cows were infected with eruptions, sores and scabs on their breasts, especially on their paps. None of the animals had any constitutional affection, nor could I learn that any of the milkers were infected. The eruptions now spoken of break out, as I was told, especially in new comers. Fresh cows, it was said, were apt to be thus affected, on account of the much richer food which is given in London than in the country. The same kind of sores, eruptions and scabs (which must be distinguished from the cow-pox), I apprehend are common in the country; of which the following testimonials will be useful.

Sir Isaac Pennington, who could not learn that the cow-pox was prevalent in Cambridgeshire, says, "I find cows are liable to inflammation of the udders, but they do not affect the hands of the milkers."

A number of milch cows are kept near Twickenham, and the Beauchamp* surgeon gave himself much trouble to oblige me, by making inquiries according to the direction of my queries. He instructs me "that all the cow-keepers agree that warts, and small bladders, or pustules, appear frequently on the teat of the cow, but never observed the animal, or the milkers, to be affected, not even when these pustules were burst by the hands of milkers who had never suffered the small-pox.

Dr. Beckwith,† of York, who well merits my best thanks, bestowed great pains in making inquiries among the medical practitioners in his neighborhood, and the farmers. His report is, "I am well satisfied that no such disease as the cow-pox has ever appeared here in the memory of man; but soreness and chop of the paps are observed, from distension by milk in summer, never in winter, without affecting the hands of milkers."

In the *Pestes bovilla*, or murrain, the breasts, and especially the paps, are sometimes affected with pustules, or tubercles‡; which, however, seem to be in that disease the least of the unfavourable symptoms.

Dr. Belcombe, of Scarborough, in his obliging letter, observes,‖ "there is a disease of the paps, which renders them exceedingly sore and difficult to milk, but it is not infectious, and the same cow has it many times; nor are the hands of the milkers ever sore from it. It commonly happens in hot and wet summers."

On considering the facts of the preceding history, it appears that some useful conclusions of a practical kind may be drawn from them.

I. The body of evidence is numerous and respectable, declaring that a person who has labored under the cow-pox fever, and local eruption, is not susceptible to the small-pox. It does not appear that a single well authenticated contravening instance has fallen under observation. But I do not apprehend that accurate and able reasoners will consider the fact as completely established; though I doubt not they will allow that the testimonies now produced greatly confirm the probability; and that the cautious appropriation of it, in practice, is warrantable.

In the present inquiry the attestations have been obtained from so many persons, that it seems highly improbable, indeed, that the contrary instances should have been unobserved, or purposely kept out of sight. If the fact had been supported by the testimony of one observer only, the experience of the world would have justified us in demanding the account of the failures; after the example of the keen skeptic of old, who, on being shown the native tablets of those who had been preserved from shipwreck, instead of yielding his assent, replied, "Where are the tablets of those who have perished?" §

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* Mr. Beauchamp's Letter, Trickenham, Sept. 18, 1798.

† Dr. Beckwith's Letter, York, Sept. 19, 1798.

‡ Illos duntaxat boves, and quidem admodum raros, mortem effugisse quibus abscessus ac decubitu informam tuberculorum, scabici, depilationis, vel rhagadum, in uberum papillis fieri contegerit.—Lancisi de bovilla peste, pag. 3, tom. 2, No. 134.

‖ Dr. Belcombe Letter, Scarborough, Sept. 22, 1798.

§ Intellectus humanus in iis quæ semel placuerunt (aut quia recepta sunt et credita, aut quia delectant) alia etiam omnia trahit ad suffragationem et consensum cum illis. Et licet major sit instantiarum vis et copia quæ occurrunt in contrarium; tamen eas aut non observat aut contemnit, aut distinguendo summovet et rejicit, non sine magno et pernicioso præjudicio quo prioribus illis syllepsibus authoritas manent inviolata. Itaque recte respondit, qui, cum suspensa tabula in templo ei manstraretur eorum, qui vota solverant, qui naufragii periculo elapsi sint, atque interrogando premeretur, anne tum quidem eorum numen agnoscere quæsivit denuo; *At ubi sunt illi depicti qui post vota nuncupata perierunt?*—Verulamii Novum Organum Aphor. XLVI.

Granting the truth of this fact, its usefulness in practice, in contemplation of it as a
bstitute of the small-pox, must depend upon the effects of the cow-pox, in comparison
h the small-pox, especially in the particulars *of the degree of danger to life; the kind
symptoms and their duration; and the subsequent effects on the constitution.*

1st. The evidences, showing that no one has ever died, or even been apparently in
nger, are the same, as those for the fact itself; that a person is not susceptible of the
all-pox after having suffered the cow-pox. But the conclusion, with respect to the
unt of danger, is far more equivocal. The comparison for this purpose should be made
th not fewer than one, or even two thousand instances. For, though in several
ndred examples of the cow-pox, which have been under observation, not one person
s fallen a victim; this might, and indeed has been, the fortunate issue of the inocu-
ed small-pox, of which it will suffice to give two instances.

Dr. William Heberden informs me, that at Hungerford, a few years ago, in the month of
tober, 800 poor persons were inoculated for the small-pox, without a single case of death.
exclusion was made on account of age, health, or any other circumstance, but preg-
ncy; one patient was 80 years of age; and many were at the breast, and in the state
toothing.

Dr. Woodville acquaints me, that in the current year, from January to August inclu-
e, out of upwards of 1700 patients inoculated at the Inoculation Hospital, including
in and *out* patients, *only two died*, both of whom were of the latter description.

Such instances of success can only be attributed to a certain favorable epidemic state
the human constitution itself, existing at particular times; for the proportion of
ths is usually much greater; indeed, sometimes it is very considerably greater, owing,
bably, to certain unfavorable epidemic states. Of the various different estimates
ich have been made, the fairest seems to be that which states (under a choice of the
st favorable known circumstances which can be commanded) one death out of two
ndred inoculated persons. But when it is considered that we are not to make the
nparison between the inoculated small-pox, and what may be called the *natural* cow-
; when it is considered that the inoculated cow-pox, in respect of the local eruption
ulceration, is a much less painful and shorter disease than the natural, or casual
-pox; when it is considered that the inoculated small-pox is especially dangerous
m the number of eruptions, and that there is only a trifling local eruption of the part
soned in the inoculated cow-pox; when it is considered that the cow-pox infection is
propagated in the state of effluvia. I say, from such considerations, it seems to be
st reasonable to conclude, that *that there is great probability of the cow-pox either not
ing fatal at all, or at most being much less frequently so than the inoculated small-pox.*

urther: the comparisen of the two diseases should be instituted, with respect to
ger, under the particular circumstances of *Pregnancy; Age toothing; Peculiar morbid
es; Peculiar healthy states, or Idiosyncracies; and certain seasons or epidemical states.*

Pregnancy. The inoculated small-pox is so commonly mortal to the unborn in every pe-
d of gestation; and so frequently so likewise to the mother in advanced states of ges-
on; that no prudent practitioner would choose to inoculate under these circum-
nces; but to escape the taking the disease by effluvia, in the casual way.* The expo-
to infection, being sometimes unavoidable, I confess I feel anxious to ascertain the
cts of inoculating the cow-pox infection in such persons. And on the grounds of the
htness and short duration of the cowpox eruptive fever and of the merely local erup-
. I apprehend a practitioner would be justifiable in preferring the inoculation of the
ction of this distemper to that of the small-pox.

n another account, the practice of inoculating the cow-pox seems recommendable in
gnancy, namely, that of preventing the irritable state of the womb, which is produced
abortion, during the small-pox. From which irritable state, the female will be very
le, in future, to the misfortune of abortions. This is so notorious a fact in brutes, that
w which has suffered abortion, while laboring under the *Lues bovilla*, or murrain,
seldom, in future, bring forth a live calf; and on this account such cow becomes
tly degraded in value. Whereas a cow, which has had the inoculated murrain when
lf, or at least before she was impregnated, is thereby greatly enhanced in value. It
the great Camper who recommended to his countrymen in Holland the general inoc-
ion of calves for the murrain. The matter is most advantageously inserted into the
tail or dewlap.

r. Layard says, oxen may be inoculated, either with the pus of their eruptions, or
h the mucus from the nose; and that few, comparatively with the casual disease, die.
n were not infected by eating matter of the pustules with their corn; not by cover-
their heads with a cloth, which had been impregnated with steam from the breathing
fected oxen.

hether the unborn animal will take the infection of the cow-pox from the mother,
question for future observation to determine.

* See my paper *On the effects of the variolous infection on pregnant women.*—Medical Annals, Vol. IX.
ade 2d, 1795.

It has been fully determined antecedently to the recent controversy between two eminent anatomists for the honor of the discovery, by pathological observations, and demonstrated by anatomical* experiment and artifices, that the blood of the mother does not pass to the foetus, nor return from the foetus to the mother, for the unborn frequently escapes the disease of the smallpox, although the mother be affected with it; and when the foetus is infected, it is uniformly subsequent to the eruption, and even to suppuration of the pustules on the mother.† Further injections will pass from the umbilical arteries of the foetus into its body, and return by the umbilical vein, provided the placenta, or vicarious lungs of the foetus be entire. The foetus then does not receive its blood from the mother, nor does the blood of the foetus circulate through the mother. Yet the infant, before birth, frequently does receive some kinds of infectious matter from the mother, viz: the syphilitic, variolous, etc., and of consequence it seems possible that it may receive the cow-pox infection to its formation by the mother's constitution. In this case we should expect no local disease, but merely the specific fever.

Age. Whatever doubts may be entertained of very advanced or decrepit age being adverse to the success of the inoculated small-pox, I am sure that I shall be supported by the opinion and practice of a very decisive majority that *infancy* is the state in which the largest proportion die under inoculation. In medical families, and in large towns, where, to the reproach of our police, persons labouring under the small-pox are suffered to appear in the streets and public walks; even the most cautious practitioners deem inoculation of infants warrantable, but not even then otherwise than to avoid the casual disease. Of the effects of inoculation of infants with the cow-pox infection, we have but one or two examples; however, these are in favor of the practice.

Toothing. Though the tender, irritable state of a new-born child may be a more dangerous one with the small-pox, than even the state of actual great irritation during the cutting of teeth with this disease, yet the evidence in point of safety is against inoculating the small-pox in the latter cases. This being the fact, we shall feel inclined under the circumstances of dentition, to inoculate for the cow-pox, if exposure to the small-pox infection be unavoidable.

Peculiar morbid states. Certain diseases have been found to have no influence in occasioning the inoculated small-pox to take place in a severe manner. On the contrary, it appears that some of these diseased states render the small-pox milder. But of the influence of such morbid conditions on the cow-pox, we possess no experience to authorize an opinion. There are some states induced by particular diseases, namely, by the measles, whooping-cough, etc., which are considered to be the occasion of severe disease in the inoculated small-pox; and from this consideration, under the circumstance of unavoidable exposure to the small-pox infection, it seems warrantable to prefer the inoculation of the cow-pox.

Peculiar states of health, Idiosyncracies. The cases of certain families in which the small-pox is uncommonly severe, and of other families in which it is very mild, are so frequent as to have fallen under the notice of every physician of experience. Some families have been so unfortunate that all their children have died in the small-pox either in the casual way or by inoculation. It is not a very great rarity to find a family in which several children have fallen victims to the small-pox, and in which a single surviving child remains; in such case, the parents, and perhaps the child, are under constant apprehensions of the casual small-pox, for they are deterred from inoculation by what has happened. Surely, in such circumstances, one would be inclined to commend inoculation for the cow-pox.

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* Succus nutritius et chylosus matris, ex poris et vasculis uterinis interventu membranæ villosæ tenuissimæ quæ chorio contigua est, non secus ac chylus a tunica intestinorum villosa recipitur, absorbetur et per umbilicalem venam fertur, ex qua cum sanguine ad hepar infantis deducitur.——

Nutritur infans mediante succo temperato, gelatinoso matris, qui per spongiosam uteri substantiam transcolatur et a secundina recipitur, per cujus vasa ad infantem defertur.——

Ipsa secundina quatenus utero adhaæret ex ejus substantia porosa succum alibilem, non vero sanguinem matris recipit—Credididerunt veteres, sanguinem matris nutrire infantem et vasa uteri cum vasis secundinæ et foetus invicem connectised notabile est, liquorem siphone umbilicales arterias injectum per venas umbilicalem redire, modo placenta illaesa fuerit; ex quo apparet, nullus dari anostomoses vasorum uteri cum vasis secundinae et foetus, neque sanguinem foetus rursus ad venas matris redire. Placenta uteri ex innumeris capillaribus minimis vasculis est contecta, per quae dum transit sanguis atteritur, comminuit inque minimas partes ac globulos dividitur, intima unione succi nutritii cum sanguine facta, ut hac ratione per tenues canaliculos embryonis commodius transire et nutritionem praestare possit: unde revera secundina in foetibus vice fungitur pulmonem, qui in foetu a munere suo vacant, quod identidem in intima sanguiris partium comminutione earumque unione cum chyloso succo consistit: qua de causa etiam vena umbilicalis id habet peculiare cum vena pulmonali ut sanguinem fluxilem floridum, et arterioso similem vehat quod omnibus aliis venis negatum est.—F. Hoffmann, t. 1 lib. 1 sect. 11. cap. XIII.

† See the paper above cited on the effects of variolous matter in pregnant women.

ad often seen the disease in Wiltshire and Gloucestershire. The milkers, he said, were sometimes so ill, s to lie in bed for several days, and there was a fever at the beginning, as in the small-pox, but that no he ever died of it. He had known many persons who had laboured under the cow-pox, but who had ver suffered the small-pox, although it prevailed in their own families; except in one instance in which was told that the person who took the small-pox, had gone through the cow-pox when a child. The me servant said it was a common opinion, that people who have been affected with the cow-pox, to use s own words, are "hard to take the small-pox."

Mr. Francis, who keeps a farm for milch cows on the road to Somers' Town, had seen the disease several mes in the autumn among his cattle, and he knew that it was very apt to produce painful sores on the ilkers; but he had never heard, or observed, that it prevented persons from having the small-pox.

He said that three years ago, in the spring, the disease prevailed at several farms on the New Road.

A male servant of Mr Francis, who has a good understanding, and is a man of veracity, and had lived in iry farms all his life, stated, "that he had seen the cow-pox thirty-five years ago at King's Wood, in mersetshire, and frequently there, and in London since that time. The disease, he said was then vul. rly called the cow-pox; it appeared on the teats and udders with fiery or flame like eruptions—was very fectious among the cows and the milkers; but never knew either human creature, or beast die of it. It ects the hands and arms of the milkers with painful sores, as large as a sixpence, which last for a month more, so as to disable the sufferers from continuing their employment. The disease breaks out especially the spring, but occasionally at other times of the year. Most of the cows in his master's, Mr, Francis; m, were infected three years ago in the spring at which times many of the milkers were also infected. new cow is very liable to take the disease. He had always understood that a person who had had the cow' x, could not take the small-pox, and never knew in the course of his life an instance of the small-pox in ch persons.

The following instances fell under his own observation: a fellow male and a female servant were affected th the cow-pox; some time after this, the parish in which they lived were in general inoculated for the all-pox, but these two persons, who had never labored under the small-pox, could not be infected with s disease; nor did they take it, although they subsequently lived with their children while they were fering the small-pox. He also believed, and it was a common opinion in many parts of the country, t persons who have undergone the small-pox cannot take the cow pox. He himself labored under the oculated small-pox when seventeen years of age, but never took the cow-pox, although he had milked a at number of cows laboring under the disease. He had never known either a human creature, or cow e the disease more than once. He had the measles previously to the small-pox, as well as the hooping gh.

t some other farms, near London, where milch cows are kept, I found the disorder was not known either the masters, or servants.

Dr. Haygarth very kindly wrote me a letter from Bath, on the 30th of August last, in which he says, o none of your questions, concerning the cow-pox, can I give any answer from my own knowledge. Of h a distemper, I never heard among the Cheshire, or Welsh farmers. My first intelligence upon this ject came from my friend, Dr. Worthington, of Ross, some time ago. He, as well as another friend, Dr. rcival, speak very favorably of Dr. Jenner, on whose testimony the extraordiuary facts he has published present principally depend."

I feel most sensibly the great favor shown to me by Professor Wall, of Oxford. Although this gentle- n's zeal and ability in promoting useful inquiries are acknowledged, I cannot but attribute the great ns which he bestowed to procure answers to my queries in so short a time as I required, in part, to the ndship founded in the days of academical studies; to use this amiable gentleman's own words—"those s of free, manly, and liberal conversation which I reflect on with infinite pleasure.

The information belonging to this place, from Professor Wall,* is the answer to the question, whether re is sufficient evidence that the small-pox cannot infect a person who has once had the cow-pox, at- ded with fever; and if there has been a local affection without fever, is such person still capable of tak- the small-pox?

I receive but one answer to the two different modes of the question, which is, that any person who has had the cow-pox, has never been known to have the small-pox."

A servant who has kept the cows of a considerable dairy-farm in this neighborhood a great many years, me that he had the cow-pox early in life. Yet about six or seven years ago he wished, for security, e inoculated for the small-pox—the operation was performed three several times, but no disorder nor ption ensued—the Surgeon, a gentleman of great eminence in this place, asked him if he had ever had cow-pox; upon his answering yes, the Surgeon replied. Then it is useless to make any farther trial. s servant, the next year, had several children inoculated by Sutton. He was with them all the time till r recovery, but did not receive the infection. A servant-girl at another considerable farm, told me had the cow-pox early in life; several years after she was inoculated, but nothing took place, except appearance of red blush round the incision similar, I suppose, to what Dr. Jenner mentions.

his red suffusion has been hastily, by some inoculators, regarded as a proof, that the system has been cted with the virus of the small-pox; but neither this appearance, nor even a much more considerable ction of the arm is always sufficient security against future infection, unless, there has been some erup- —See Memoirs of the Medical Society."

om Mr. Dolling, an Inoculator at Blandford, I have received important intelligence, for which I am r further obligations to the Rev. Herman Drewe.† "Mr. Dolling has inoculated for the small pox a t number of persons, who said they had been affected with the cow-pox, and very few of them took the tion, to produce the small-pox, and he is of opinion that those who took the small-pox, were mistaken pposing they had really labored under the cow-pox. In one family five out of seven children took the pox, by handling the teats of a cow affected with the cow-pox; these seven children were inoculated he small-pox, but none took the infection, except the two who had not labored under the cow-pox.

. Croft tells me, that in Staffordshire, to his knowledge, the fact has been long known, of the cow-pox, h prevails in that county, affording an exemption of the human subject from the small-pox. This gen- an affords me an unequivocal proof of his conviction of the safety and efficacy of the inoculated cow- by his application to me for matter, in order to inoculate one of his own children.

honorable friend, Mr. Edward Howard, has been assured on very good authority, that of a relation, is an officer in the Oxfordshire Militia, that it is a received opinion among the soldiers, that it is un- ssary to be inoculated for the small-pox, if they have already labored under the cow-pox, as many of have done.

Redfearn of Lynn‡ informs me, that "the cow-pox is a common disease among the cattle in this part, he farmers have made use of the appellation cow-pox for near thirty years, although totally ignorant e disease existing in the West of England." But,

* Dr. Wall's Letter, Oxford, September 3, 1798.
† The Rev. H. Drewe's Second Letter, September 17, 1798.
‡ Mr. Redfearn's Letter, September 15 1798.

Dr. Alderson, of Norwich* acquaints me. that there is reason to believe the disease is not known in his neighborhood.

My correspondents in the North and East Ridings of Yorkshire, in Durham, in Lincolnshire, and in the neighborhood of Windsor, acquaint me that the cow-pox is not known in those parts. But from the success which I have had in discovering the disease, by making a strict inquiry in farms. where it was believed not to exist, I can scarce doubt that it breaks out occasionally in every part, where a number of cows are kept, and that the infection is widely disseminated

"I do not find that the cow-pox is known in Lancashire. Dr. Currie, † of Liverpool, obligingly answers my letter; he says, 'I have made inquiries among the farmers, but I have not been able to find one who is acquainted with the disease. Of course I cannot answer any of your queries. My friend, Dr. Percival, of Manchester, who is now here, never heard of the cow-pox in this county, any more than myself."

II. Person who have been affected with the specific fever, and peculiar local disease by inoculation of the cow-pox infection, who had not previously, undergone the small pox, are thereby rendered unsusceptible of the small-pox.

The first set of evidences of this fact are those of Dr. Jenner, in the cases xvii, xix, xx, xxi, xxii, xxi They are instances of inoculation of the cow pox as in the small-pox, with matter taken from the teats cows. A fever like that of the small-pox arose in six to nine days after the incision, but scarce of mo than twenty-four hours, duration; attended with an inflammatory appearance, or erythematous efflor cence around the parts inoculated, and postulous sores of those parts; which do not suppurate, but rema limpid till they disappear; and there is no eruption of other parts of the skin, as in the small-pox.

In the cases of inoculation under Dr. Jenner, the local affection was commonly as slight as in the inoculated small-pox, but sometimes there appeared a disposition to a more extensive inflammation of the around the parts in which the matter was inserted. "It seemed to arise from the state of the pusti which spread out accompanied with some degree of pain, to about half the diameter of a sixpence. By application of mercurial ointment to the inflamed parts, (as is practised in the inoculated small pox) complaint soon subsided. To prevent inflammation of the skin, caustic was also applied to the vesicle the inoculated part, to excite a different kind of inflammation; but the precaution was perhaps unnecessa as a third patient had nothing applied, and the arm scabbed quickly, without any erysipelas.

One of these patients inoculated with the cow-pox was only six months old, and who took the disease. none of the above cases, after the cow-pox; could the small-pox be excited, by repeated inoculation. confidence of Dr Jenner, in the safety and efficacy of the inoculation of the cow-pox is unequivocally clared by the inoculation of his own son, R. F. Jenner, aged elevenmon ths; although the poison not take effect in this instance. The project of inoculation of the cow-pox occurred to other practition antecedently to Dr. Jenner's experiments.

Mr. Drewe, in his letter above cited, speaks of the practice. He says, "Mr. Bragge and I endeavored try the experiment of inoculating with the matter of the cow-pox, but from the scarceness of the disease and unwillingness of patients, we were disappointed."

Mr. Pulteney informs me, that "a very respectable practioner acquainted him that of seven children whom he had inoculated for the small-pox, five had been previously infected with the cow-pox purposely being made to handle the teats and udders of infected cows; in consequence of which, they suffered distemper. These five, after inoculation for the small pox, did not sicken; the other two took the temper."

Farther, "A farmer in this country inoculated his wife and children with matter taken from the teat cow. At the end of a week the arms inflamed, and the patients were so far affected, as to alarm the farmer although unnecessarily, and incline him to call in medical assistance. They all soon got well, and afterwards inoculated for the small-pox, but no disease followed. I was not applied to in this case, but fact is sufficiently ascertained."

Mr. Downe furnishes me‡ with important information on the present fact. "R. F. near Bridport, about twenty years of age, was at a farm house when the dairy was infected with the cow-pox. It suggested to him that it would be the means of preserving him from the small-pox, which he had taken, if he would submit to be inoculated with the cow-pox; he gave his consent; he was infected in or three places in his hand with a needle. He felt no inconvenience till about a week, when the began to inflame, and his hand to swell, his head to ach, and many other symptoms of fever came on. was recommended to keep much in the open air, which he did, and in four or five days the symptom fever went off, as the maturation of the hand advanced. The parts soon healed, leaving permanent He was afterwards inoculated twice by my grand-father, and a considerable time after twice by my fa but without any other effect than a slight irritation of the part, such as is occasioned in the arms of pe who have already had the small-pox. It was not expected at the time, that the small-pox poison wou effectual, but it was inserted, partly by way of experiment, and partly by way of precaution, the smal being then in the family. The small-pox has been repeated since in his own family, and he never avoid being confident that it was not possible to infect him with this disease. The next case by Mr. D although it affords defective evidence, is not useless. "I have lately conversed with a person who play, inoculated in the hand with the cow-pox matter. The wounds apparently healed for a time then inflamed. He had a swelling in the axilla, pain in the head, sickness, and slight fever. No eru took place, but there was much maturation at the place of insertion, and considerable scars remain."

Next hear what Professer Wall says in his answer to the question, "Whether the disease has been municated by inoculation, and whether it has produced a milder or more severe disease than in the way?"

"I have‖ not yet learnt that this disorder has, in this part of the country, ever been propagated by lation designedly. It has been communicated to persons who have had slight wounds from thorns, sions of the skin from other causes, perhaps more readily than in the common way; but it has peared that the character or severity of the disorder has been altered by this circumstance."

Mr. Dolling,§ of Blandford, communicates the following: "Mr. Justings of Axminster inoculat wife and children with matter taken from the teats of a cow that had the cow-pox: in about a week inoculation, their arms were very much inflamed, and the patients were so ill, that the medical assi of Mr. Meach, of Cerne, was called for. The patients did well. They were afterwards inoculated small-pox by Mr. Trobridge, without effect.

*Dr Alderson's Letter, Norwich, September 16, 1798.
†Dr. Currie's Letter, Liverpool, September 8, 1796.
‡See Mr. Downe's Letter of August 25, 1798.
‖Professor Wall's Letter, above cited.
§Mr. Drewe's Second Letter, above cited.

III. The disease produced by inoculating with the matter of the cow-pox, does not ffer from the disease produced by inoculation with the matter from the human animal; r is any difference observed in the effects of the matter from the first human subject fected from the brute animal, or from the matter generated successively, in the second, rd, fourth, or fifth human creature from its origin in the brute.

his important fact, at present, is only supported by the instance related by Dr. Jenner, in the cases xix xiii, p. 37 to 44. Hence, according to these instances, the poison of the cow-pox has the same properties. ppears from its effects on the human constitution, whether it be generated by the cow, or by the human mal; and these properties are the same, however remote from the origin of the poison in the cow. But as not been determined by inoculating the teats of cows with the matter taken from the cow, and with r taken from the human creature; that the properties of the poison from this latter source are the same h regard to the brute, as those of the matter from the cow with regard to the same animal.
apprehend that the cow-pox is the only example at present known, of a permanent specific infectious ase in the human constitution, produced by matter from a different species of animal; but it has been n conjectured, that many of the infectious diseases of the human species are derived from brutes.

V. A person having been affected with the specific fever, and local disease, produced the cow-pox poison, is liable to be again affected as before by the same poison; and such person is not susceptible of the small-pox.

find that most part of professional men are extremely reluctant in yielding their assent to this fact. e, indeed, reject it in the most unqualified terms. They are not averse from admitting the evidence, the cow-pox may affect the same constitution repeatedly; or even that a person having had this disease, nsusceptible of the small-pox; but that the constitution having suffered the cow-pox, should still be eptible of this disease, and not be susceptible of the small-pox, is an assertion with regard to which demur to acquiesce. The unfavorable reception of the evidence for this fact does not seem to arise so h from the observations in support of it, being suspected to be inaccurate, or sufficiently full and com- e, as from its appearing, as they say, absurd and inconceivable. On inquiring why the fact appears in light, we find it is because there is no support from any other analogous fact. There is, in reality, no ogous fact. We have facts which show that a person having undergone certain diseases, occasioned particular poisons, in some instances is, and in others is not, again susceptible of the same disease, by same poison; but the instance before us is the first which has been observed of the constitution being, ered inexcitable to a disease, from a given morbid poison, by having suffered a different disease n another different poison, and yet it remains suspectible of this different disease by given morbid poison. In the firsl instance of certain new facts, it is easy to conceive that there be no analogous fact to the one discovered. When the small-pox first broke out, on its being discovered the same constitution could not undergo this disease a second time, no analogous fact was, I think, known; and on that account it probably was not admitted without much hesitation. But on a subse- nt discovery that the same constitution could not be infected more than once with the measles, this, ell as the former fact, readily found acceptance. An evidence for a fact ought not to be rejected, nse it is incomprehensible or inconsistent with what is already known; but on the present occasion, if subject be well considered, it does not seem to be difficult to conceive that a change may be effected in human constitution, by a disease from a morbid poison, so as to render such constitution unsusceptible disease from a given different morbid poison, and yet such constitution shall remain susceptible of the er disease, from the former morbid poison. Hence, I apprehend, the only just ground of objection h may be taken, is that of the observations on the authority of which the fact is said to be established, s then state the evidence.
der Case ix. p. 21, Dr. Jenner relates the history of a person who was first affected with the cow-pox year 1780, a second time in 1791, and a third time in 1794. "The disease was equally severe the second third time as it was the first," which is, in general, other wise both in the brute and human kind. Inoc- on of the variolous poison was twice instituted in this patient, but without producing disease, nor the patient be infected by association with persons laboring under the small-pox.
nother patient (see Jenner, p 51.) suffered the cow-pox in 1759; in 1797 he was inoculated with the riolous poison, but without exciting the disease. In 1798 the cow-pox again took place
th respect to the information which I have gained by my inquiries, concerning this fact; some of my espondents observed, that the cow-pox occurred so seldom among the human kind, that they had no vations to determine, whether a person could undergo the disease more than once; the greater part of orrespondents ventured to say, that it had never been seen more then once in the same person; but testified that the cow-pox certainly does take place, repeatedly, in the same constitution.
. Woodman, of Aylesbury,* says, "the cow-pox does not supersede itself on future occasions, for that oys have it repeatedly."
may be worth while to notice, that none of the gentlemen of whom I made inquiries, knew an instance e disease attacking the same cow more than once; and it was said that it was the current opinion this was a fact.
evidence for this fact, to my apprehension, only proves, satisfactorily, that the local affection of the ox may occur in the same person more than once; but whether the peculiar fever also occurs more once in the same person, from the cow-pox poison, does not appear certain; and must be determined ture observations, to be made with a particular view to this point. Future observations must likewise mine, whether, in those cases, (if such occur) in which a person, after having gone through the cow- takes the small-pox the cow-pox was attended with the fever, or was merely a local affection. It seems y well ascertained, that the variolous poison may produce the small-pox only locally, or without any ion of the constitution; and in such a case, the constitution is still susceptible of the small-pox, and n both cases, viz: of the local affection only, and of the whole constitution, the matter of the eruptions able of infecting others, so as to produce the small-pox: either locally only, or also in the whole con- ion. Hence it seems probable, that similar local and general effects may be produced by the cow-pox n, and not only in the human kind, but in cows. I acknowledge, however, that the case, p 51. in r's book, militates against this supposition.

A person is susceptible of the cow-pox, who has antecedently been affected with small-pox.

* Mr. Smith's Letter, above cited.

Dr. Jenner, pp. 15-19, gives some instances of persons taking the cow-pox who had certainly gone through the small-pox. But he says, "It is a fact so well known among our dairy farmers, that those who have had the small-pox either escape the cow-pox or are disposed to have it slightly; that as soon as the complaint shows itself among the cattle, assistants are procured, if possible, who are thus rendered less susceptible of it, otherwise the business of the farm could scarcely go forward."

I have not got much additional information on this fact. It seems, however, sufficiently authenticated that people may have the cow-pox after they have had the small-pox, but it will require more nice attention to satisfy the query whether, in such cases, the cow-pox affects the whole constitution or is only a local affection?

Mr. Downe*, in particular, speaks of a family who did not take the cow-pox when much exposed to the infliction, because they had all gone through the small-pox, except one who had been afflicted already with the cow-pox. I met with a servant at Mr. Rhodes' farm, on the Hampstead Road, who attested that he had suffered the cow-pox fourteen years ago, but that long before that time he had gone through the small-pox.

Professor Wall† says: "The answer to the question whether a person is capable of taking the cow-pox who has gone through the small-pox, is of some decidedly that such a person is not liable to the infection of the cow-pox. Others of equal experience have answered this question with doubt."

At Mr. Rhodes' farm, at Islington, I found that one of the male servants who had been long employed in taking care of milk cows in the environs of London, distinguished the cow-pox very clearly from common inflammation of the teats with scabs, with which several cows were at the time that I saw this man affected. He had never contracted the cow-pox, although he had been repeatedly exposed to the infection, and when others took it. He was deeply pitted with the small-pox, which he labored under when a young child.

VI. The cow-pox is not communicated in the state of effluvia or gas, nor by adhering to the skin in an imperceptably small quantity, nor scarce, unless it be applied to divisions of the skin by abrasions, punctures, wounds, etc.

Some morbific poisons are communicated to animals only in the state of invisible effluvia or gas, e. g. the miasmata which produced intermittent fevers: the contagion which produces the ulcerous sore throat, that which occasions the whooping-cough, the measles, etc. Other morbific poisons are communicated both in the state of effluvia and in a palpable or visible quantity, e. g. the variolous poison, the matter which produces in oxen, the murrain or loose bovilla, etc. Others again are not propagated in the state of effluvia or gas, but in a palpable or visible quantity only, as the hydrophobic poison, the syphilitic, etc., and to these last must now be added the morbific poison of the cow-pox.

It does not appear that the disease spreads from any infected cow among other cows which are fed in the same stable like a contagious disease. Persons who sleep in the same bed with one who is laboring with the cow-pox are not in this way liable to be infected. (See Jenner, pp. 68, 69.) It is not even propagated from the cows to the milkers for the most part, unless the skin of the part of the hands to which the matter is applied be divided.

This property of the cow-pox infection not being propagated so as to produce disease, but by contact and then only when applied in a palpable or visible quantity, and also scarce unless the skin be divided, the most important one. Yet a few instances I apprehend will suffice to show clearly under what circumstances the cow-pox infliction produces disease.

A boy who was inoculated for the cow-pox slept, while he was laboring under the disease, with two other boys, but neither of them by this exposure to the affliction got the cow-pox. A young woman who had the cow-pox, with several sores, which maturated to a great extent, slept in the same bed with a fellow dairy maid who never had been inflicted either with the cow-pox or small-pox, but the disease was not communicated. A young woman, on whose hands were several large suppurations from the cow-pox, was a daily nurse to an infant, but the infant was uninfected. (See Jenner, pp. 68-69.)

I am instructed uniformly by my correspondents that the cow-pox arises only from matter evidently applied most frequently by friction of the diseased teats in milking, but sometimes from the matter lodging accidentally in some soft part, yet even under the circumstance it frequently fails to infect unless there be a cut, scratch, puncture, etc., of the hands.

Mr. Drewe mentions the instance of a woman who lost her eyesight in consequence of the infectious matter being heedlessly applied to the eye, and that the cow-pox has been observed to take place from handling the milk pail on which the infectious matter has been incautiously allowed to remain.

VII. The local affection in the cow-pox produced in the casual way is generally more severe and of longer duration than usually happens in the local afflictions in the inoculated small-pox, but in the cow-pox the fever is in no case attended with symptoms which denote danger, nor has it in any instance been known to prove mortal.

The cow-pox in the incidental way, for sufficiently obvious reasons, most commonly affects the palms of the hands. There is a wide difference in the degree of a local affection. I am instructed by my communications that the extreme cases are, firstly, those in which the patients are inflicted with so much pain and inflammation as to be confined to their beds for several days, and have painful phagedenic sores for several months. Secondly, those cases which are so slight that the patients are not confined at all, but get well in a week or ten days. In the more severe cases, in which the inflamed spots become vesicular with edges, the pustules more elevated than the cuticle, and of a *bluish* or a *purple color*: there are pains of the axilla, fever and now and then a little delirium.

These symptoms continue from one to three or four days, leaving ulcerated sores about the hands, which from the sensibility of the parts, are very troublesome, and commonly heal slowly, frequently becoming phagedenic, like those from which they sprung. The lips, nostrils, eyelids and other parts of the body are sometimes affected with sores, but these evidently arise from their being heedlessly rubbed or scratched with the patient's inflicted fingers. Dr. Jenner considers the *bluish* or *livid* tint of the pustules to be characteristic of the cow-pox. P. 5.

Mr Drewe's information on the fact is, "That the symptoms are similar to the small-pox, but less violent. The pustules are only about the hands, in the parts which have been in contact with the infected teat."

*Mr. Downe's letter of August 30.

†Letter of Professor Wall, above cited.

in answer to the question whether on the whole the cow-pox is a disease of less magnitude than the ll-pox by inoculation, he says: "When I consider what a slight disorder the inoculated small-pox is. ill not, in my humble opinion, admit of comparison."

r. Dolling says: "There is a swelling under the arm, chilly fits, etc., not different from symptoms of breeding of the small-pox. After the usual time of sickening, namely, two or three days, there is a le ulcer, not unlike a carbuncle, which discharges matter."

r. Pulteney's account of the symptoms is in these terms: "A soreness and swelling of the axillary ds as under inoculation for the small-pox, then chilliness and rigors and fevers as in the small-pox. or three days afterwards, abscesses, not unlike carbuncles, appear generally on the hands and arms. ch ulcerate and discharge much matter."

r. Downe, speaking to this point, says: "The symptoms, as far as could be ascertained in the cow were similar to those of the small-pox, but I never heard of any who had them in any degree alarm-" Again, "the symptoms are exactly similar to those of the small-pox by inoculation, when of the most orable kind. The disease generally disappears in about the same time that the small-pox does."

r. Giffard tells me that "he never heard of either men or cows dying of the cow-pox."

r. Woodman (see Mr. Smith's letter) testifies that he never observed symptoms worthy to be called er; there was merely "feverish heat when the pain was considerable."

r. DeSalis observes that one of the persons affected with the cow-pox "was much struck with the re-blance to the symptoms he had lately experienced in the small-pox."

rofessor Wall's information is that "the milkers have the disorder only once, generally with preceding r, sometimes very violent, sometimes more mild." "No human creature, or cow, has been known to be anger, or to die of the cow-pox." After a strict inquiry at the milk farms adjoining to London, I could find that any person had died of the cow-pox.

ith respect to the animals from which the human creature derives the disease, it is known only to effect s. They have, sometimes, but it is very seldom observed, a disorder of the whole constitution, "the etion of milk being much lessened." The local affection appears with irregular pustules on the nip-. "At their first appearance they are commonly of a *palish blue*, or, rather, of a color somewhat ap-ching *livid*, and are surrounded by an erysipelas inflammation. These pustules, unless a timely rem-be applied, frequently degenerate into phagedenic ulcers, which prove extremely troublesome. (See ner, pp. 3 and 4.)

r. Pulteney acquaints us, that "the disease makes its appearance on the udder of the cow, and affects teats principally, which inflame, then ulcerate, discharging a bloody matter: *but it does not appear that disease is more local, as the cows seem not to be out of health in other respects.*"

om Dr. Drewe's testimony, however, it appears that the whole constitution of the cow is affected re being "loss of appetite and of milk," as well as "ulcerated teats," so as to render the animal, in e cases, totally unfit for the dairy. "It is infectious in the herd, and the infection is probably con-d by the person's hands that milks them."

r. Downe's information, relating to the present part of our inquiry, is that "the only symptoms were tions about the teats of the cow, exactly similar to the small-pox, which gradually become sore, and off; and the infection was soon communicated to a whole dairy, as was supposed by the hand of the on who milked. The animals suffered much in the operation of milking."

ofessor Wall mentions that the symptoms are "blue or livid blotches on the teats and udder, painful suppurating. The cows are seldom ill, so as to refuse their food. Others observe, that cows being rally disposed to a lax habit of body, are not so much afflicted with feverish symptoms. Some say suffer no fever at all."

e testimony of several other correspondents have been already stated, that a cow has never been n to die of the cow-pox; to which I add in confirmation, that of the milk farmers near London.

III. No consequential disease, which should be attributed to the cow-pox has been rved; nor has any disease been excited, to which there previously existed a disposi-; nor has it been discovered to produce a predisposition to particular diseases.

hough a considerable body of evidence might be stated in confirmation of these momentous facts, from xperience of Dr. Jenner, and the uniform testimony of my correspondent; and although we should lined to conclude in favor of these facts, from the consideration of the nature of the cow-pox, as far t known, yet it does not appear to my judgment that the observations and arguments warrant more conclusions on the side of great probability. A number of persons, many hundreds, have gone gh the inoculated small-pox; yet no one doubts that, in a certain proportion of instances, disease has excited and disposition to disease been produced.

are led then to think that a greater number, and more accurate observations are wanting, to author-sitive conclusions relating to the facts stated under this VIII head.

. The cow-pox infection may produce the peculiar local disease belonging to it, but out the difference of the constitution; in which case, the constitution is liable to be ted by the small-pox infection.

s fact is not of small consequence either in respect of general pathology or practice. Dr. Jenner's p 71, furnishes us with an unequivocal example of this fact. A woman was affected with the isease of the cow-pox in the ordinary way, but without any pains or swelling of the axilla, or any er of the whole constitution, this person was subsequently afflicted by the small-pox; but a fellow-nt who had suffered with the cow pox, (at the same time and from the same source of infectious r,) in which there was fever as well as local disease, could not be infected by inserting the small-pox ; even repeated trials for this purpose were successless. Hence, they who offer as evidence in-es of persons taking the small-pox after they have gone through the cow-pox, will do well to assure selves that the whole constitution was affected in the cow-pox, otherwise such evidence will be inad-ole. Analogous facts have been ascertained, on good authority in the small-pox, although the in-s are too scarce to afford too scrupulous minds full proof. It has been found that the usual loca

disease of the inoculated small pox may occur, unattended by a disorder of the whole constitution; but yet the matter of such local small-pox will, in other persons, produce not only the local disease, but genera eruption and fever; and that the person who had undergone this local small-pox only, will be infected at future time, so as to have both the ordinary local disease and fever of the small-pox with eruptions.

It appears from the observations of Dr. Jenner, page 50, Mr. Drewe, Dr. Pulteney, and others, that during the cow-pox in the human subject, inflammation and sores are apt to be excited by the matter being lodged upon various parts, especially if the skin be divided; but no mention is made of fresh fever being excited nor of the peculiar *livid* and *bluish* tint of the cow-pox pustulous sores. Enough has been said in a preceding part of this paper to direct observers in future to ascertain more accurately the effects of the agency of the cow-pox infection on the whole constitution, and on part of it only.

It will be necessary also to caution inquirers against the errors of admitting facts to belong to the cow-pox, as understood in this paper, which, in reality, belong to the chicken-pox, or swine-pox, in some provincial situations, are designated by the name of the cow-pox.

Yet another caution is necessary in investigating the truth, namely, to distinguish from the cow-pox "the pustulous sores which appear spontaneously on the nipples of the cows; and instances have occurred although very rarely, of the hands of the servants employed in milking being affected with sores in consequence, and even of their feeling an indisposition from absorption. These pustules are of a much milder nature than those which arise from that contagion, which constitutes the true cow-pox. They are always free from the bluish or livid tint so conspicuous in the pustules in that disease. No erysipelas attends them, nor do they show any phagedenic disposition, as in the other case; but quickly terminate in a scab without creating any apparent disorder in the cow." Like the cow-pox, "this eruption appears most commonly in the spring, when the cows are first taken from their winter food, and fed with grass. Jenner, p.

I observed during my visits to the cow stables near London, in August and September last, that a number of cows were infected with eruptions, sores and scabs on their breasts, especially on their paps. None of the animals had any constitutional affection, nor could I learn that any of the milkers were infected. The eruptions now spoken of break out, as I was told, especially in new comers. Fresh cows, it was said, were apt to be thus affected, on account of the much richer food which is given in London than in the country. The same kind of sores, eruptions and scabs (which must be distinguished from the cow-pox) I apprehend are common in the country; of which the following testimonials will be useful.

Sir Isaac Pennington, who could not learn that the cow-pox was prevalent in Cambridgeshire, says, "I find cows are liable to inflammation of the udders, but they do not affect the hands of the milkers."

A number of milch cows are kept near Twickenham, and the Beauchamp* surgeon gave himself much trouble to oblige me, by making inquiries according to the direction of my queries. He instructs me "that all the cow-keepers agree that warts, and small bladders, or pustules, appear frequently on the teats of the cow, but never observed the animal, or the milkers, to be affected, not even when these pustules were burst by the hands of milkers who had never suffered the small-pox.

Dr. Beckwith, of York, who well merits my best thanks, bestowed great pains in making inquiries among the medical practitioners in his neighborhood, and the farmers. His report is, "It am well satisfied that no such disease as the cow-pox has ever appeared here in the memory of man; but soreness and chaps of the paps are observed, from distension by milk in summer, never in winter, without affecting the hands of milkers."†

In the *Pestes bovilla*, or murrain, the breasts, and especially the paps, are sometimes affected with pustules, or tubercles‡; which, however, seem to be in that disease the least of the unfavourable symptoms.

Dr. Belcombe, of Scarborough, in his obliging letter, observes,‖ "there is a disease of the paps, which renders them exceedingly sore and difficult to milk, but it is not infectious, and the same cow has it many times; nor are the hands of the milkers ever sore from it. It commonly happens in hot and wet summers."

On considering the facts of the preceding history, it appears that some useful conclusions of a practical kind may be drawn from them.

I. The body of evidence is numerous and respectable, declaring that a person who has labored under the cow-pox fever, and local eruption, is not susceptible to the small-pox. It does not appear that a single well authenticated contravening instance has fallen under observation. But I do not apprehend that accurate and able reasoners will consider the fact as completely established; though I doubt not they will allow that the testimonies now produced greatly confirm the probability; and that the cautious application of it, in practice, is warrantable.

In the present inquiry the attestations have been obtained from so many persons, that it seems highly improbable, indeed, that the contrary instances should have been unobserved, or purposely kept out of sight. If the fact had been supported by the testimony of one observer only, the experience of the world would have justified us in demanding the account of the failures; after the example of the keen skeptic of old, who, on being shown the native tablets of those who had been preserved from shipwreck, instead of yielding his assent, replied, "Where are the tablets of those who have perished?" §

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* Mr. Beauchamp's Letter, Trickenham, Sept. 18, 1798.

† Dr. Beckwith's Letter, York, Sept. 19, 1798.

‡ Illos duntaxat boves, and quidem admodum raros, mortem effugisse quibus abscessus ac decumbentes informam tuberculorum, scabici, depilationis, vel rhagadum, in uberum papillis fieri contegerit.—Linn. de bovilla peste, pag. 3, tom. 2, No. 134.

‖ Dr. Belcome Letter, Scarborough, Sept. 22, 1798.

§ Intellectus humanus in iis quæ semel placuerunt (aut quia recepta sunt et credita, aut quia delectant) alia etiam omnia trahit ad suffragationem et consensum cum illis. Et licet major sit instantiarum copia quæ occurrunt in contrarium; tamen eas aut non observat aut contemnit, aut distinguendo summovet et rejicit, non sine magno et pernicioso præjudicio quo prioribus illis syllepsibus authoritas manet invicta. Itaque recte respondit, qui, cum suspensa tabula in templo ei manstraretur eorum, qui vota solverant, qui naufragii periculo elapsi sint, atque interrogando premeretur, anne tum quidem eorum numen agnosceret, quæsivit denuo; *At ubi sunt illi depicti qui post vota nuncupata perierunt?*—Verulamii Novum Org. Aphor. XLVI.

ranting the truth of this fact, its usefulness in practice, in contemplation of it as a stitute of the small-pox, must depend upon the effects of the cow-pox, in comparison h the small-pox, especially in the particulars *of the degree of danger to life; the kind symptoms and their duration; and the subsequent effects on the constitution.*

st. The evidences, showing that no one has ever died, or even been apparently in ger, are the same, as those for the fact itself; that a person is not susceptible of the ll-pox after having suffered the cow-pox. But the conclusion, with respect to the nt of danger, is far more equivocal. The comparison for this purpose should be made h not fewer than one, or even two thousand instances. For, though in several dred examples of the cow-pox, which have been under observation, not one person fallen a victim; this might, and indeed has been, the fortunate issue of the inocud small-pox, of which it will suffice to give two instances.

r. William Heberden informs me, that at Hungerford, a few years ago, in the month of ober, 800 poor persons were inoculated for the small-pox, without a single case of death. exclusion was made on account of age, health, or any other circumstance, but pregcy; one patient was 80 years of age; and many were at the breast, and in the state oothing.

r. Woodville acquaints me, that in the current year, from January to August inclu-, out of upwards of 1700 patients inoculated at the Inoculation Hospital, including *in* and *out* patients, *only two died*, both of whom were of the latter description.

uch instances of success can only be attributed to a certain favorable epidemic state he human constitution itself, existing at particular times; for the proportion of ths is usually much greater; indeed, sometimes it is very considerably greater, owing, bably, to certain unfavorable epidemic states. Of the various different estimates ch have been made, the fairest seems to be that which states (under a choice of the t favorable known circumstances which can be commanded) one death out of two dred inoculated persons. But when it is considered that we are not to make the parison between the inoculated small-pox, and what may be called the *natural* cow-; when it is considered that the inoculated cow-pox, in respect of the local eruption ulceration, is a much less painful and shorter disease than the natural, or casual -pox; when it is considered that the inoculated small-pox is especially dangerous the number of eruptions, and that there is only a trifling local eruption of the part oned in the inoculated cow-pox; when it is considered that the cow-pox infection is propagated in the state of effluvia. I say, from such considerations, it seems to be t reasonable to conclude, that *that there is great probability of the cow-pox either not ing fatal at all, or at most being much less frequently so than the inoculated small-pox.*

urther: the comparisen of the two diseases should be instituted, with respect to ger, under the particular circumstances of *Pregnancy; Age toothing; Peculiar morbid s; Peculiar healthy states, or Idiosyncracies; and certain seasons or epidemical states.*

regnancy. The inoculated small-pox is so commonly mortal to the unborn in every pe- of gestation; and so frequently so likewise to the mother in advanced states of gesn; that no prudent practitioner would choose to inoculate under these circumces; but to escape the taking the disease by effluvia, in the casual way.* The expo- to infection, being sometimes unavoidable, I confess I feel anxious to ascertain the ts of inoculating the cow-pox infection in such persons. And on the grounds of the tness and short duration nf the cowpox eruptive fever and of the merely local erup-. I apprehend a practitioner would be justifiable in preferring the inoculation of the ction of this distemper to that of the small-pox.

n another account, the practice of inoculating the cow-pox seems recommendable in nancy, namely, that of preventing the irritable state of the womb, which is produced bortion, during the small-pox. From which irritable state, the female will be very e, in future, to the misfortune of abortions. This is so notorious a fact in brutes, that w which has suffered abortion, while laboring under the *Lues bovilla*, or murrain, seldom, in future, bring forth a live calf; and on this account such cow becomes tly degraded in value. Whereas a cow, which has had the inoculated murrain when lf, or at least before she was impregnated, is thereby greatly enhanced in value. It the great Camper who recommended to his countrymen in Holland the general inocion of calves for the murrain. The matter is most advantageously inserted into the tail or dewlap.

r. Layard says, oxen may be inoculated, either with the pus of their eruptions, or the mucus from the nose; and that few, comparatively with the casual disease, die. were not infected by eating matter of the pustules with their corn; not by cover- their heads with a cloth, which had been impregnated with steam from the breathing fected oxen.

hether the unborn animal will take the infection of the cow-pox from the mother, question for future observation to determine.

e my paper *On the effects of the variolous infection on pregnant women.*—Medical Annals, Vol. IX. de 2d, 1795.

It has been fully determined antecedently to the recent controversy between two eminent anatomists for the honor of the discovery, by pathological observations, and demonstrated by anatomical* experiment and artifices, that the blood of the mother does not pass to the foetus, nor return from the foetus to the mother, for the unborn frequently escapes the disease of the smallpox, although the mother be affected with it; and when the foetus is infected, it is uniformly subsequent to the eruption, and even to suppuration of the pustules on the mother.† Further injections will pass from the umbilical arteries of the foetus into its body, and return by the umbilical vein, provided the placenta, or vicarious lungs of the foetus be entire. The foetus then does not receive its blood from the mother, nor does the blood of the foetus circulate through the mother. Yet the infant, before birth, frequently does receive some kinds of infectious matter from the mother, viz: the syphilitic, variolous, etc., and of consequence it seems possible that it may receive the cow-pox infection to its formation by the mother's constitution. In this case we should expect no local disease, but merely the specific fever.

Age. Whatever doubts may be entertained of very advanced or decrepit age being adverse to the success of the inoculated small-pox, I am sure that I shall be supported by the opinion and practice of a very decisive majority that *infancy* is the state in which the largest proportion die under inoculation. In medical families, and in large towns where, to the reproach of our police, persons labouring under the small-pox are suffered to appear in the streets and public walks; even the most cautious practitioners deem inoculation of infants warrantable, but not even then otherwise than to avoid the casual disease. Of the effects of inoculation of infants with the cow-pox infection, we have but one or two examples; however, these are in favor of the practice.

Toothing. Though the tender, irritable state of a new-born child may be a more dangerous one with the small-pox, than even the state of actual great irritation during the cutting of teeth with this disease, yet the evidence in point of safety is against inoculating the small-pox in the latter cases. This being the fact, we shall feel inclined under the circumstances of dentition, to inoculate for the cow-pox, if exposure to the small-pox infection be unavoidable.

Peculiar morbid states. Certain diseases have been found to have no influence in occasioning the inoculated small-pox to take place in a severe manner. On the contrary, it appears that some of these diseased states render the small-pox milder. But of the influence of such morbid conditions on the cow-pox, we possess no experience to authorize an opinion. There are some states induced by particular diseases, namely, by the measles, whooping-cough, etc., which are considered to be the occasion of severe disease in the inoculated small-pox; and from this consideration, under the circumstance of unavoidable exposure to the small-pox infection, it seems warrantable to prefer the inoculation of the cow-pox.

Peculiar states of health, Idiosyncracies. The cases of certain families in which the small-pox is uncommonly severe, and of other families in which it is very mild, are so frequent as to have fallen under the notice of every physician of experience. Some families have been so unfortunate that all their children have died in the small-pox either in the casual way or by inoculation. It is not a very great rarity to find a family in which several children have fallen victims to the small-pox, and in which a single surviving child remains; in such case, the parents, and perhaps the child, are under constant apprehensions of the casual small-pox, for they are deterred from inoculation by what has happened. Surely, in such circumstances, one would be inclined to commend inoculation for tha cow-pox.

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* Succus nutritius et chylosus matris, ex poris et vasculis uterinis interventu membranæ villosæ tenuissimæ quæ chorio contigua est, non secus ac chylus a tunica intestinorum villosa recipitur, absorbetur et per umbilicalem venam fertur, ex qua cum sanguine ad hepar infantis deducitur.——

Nutritur infans mediante succo temperato, gelatinoso matris, qui per spongiosam uteri substantiam transcolatur et a secundina recipitur, per cujus vasa ad infantem defertur.——

Ipsa secundina quatenus utero adhaeret ex ejus substantia porosa succum alibilem, non vero sanguinem matris recipit—Credididerunt veteres, sanguinem matris nutrire infantem et vasa uteri cum vasis secundinæ et foetus invicem connectised notabile est, liquorem siphone umbilicales arterias injectum per venas umbilicalem redire, modo placenta illaesa fuerit; ex quo apparet, nullus dari anostomoses vasorum uteri cum vasis secundinae et foetus, neque sanguinem foetus rursus ad venas matris redire. Placenta ut ex innumeris capillaribus minimis vasculis est contecta, per quae dum transit sanguis atteritur, commixtus inque minimas partes ac globulos dividitur, intima unione succi nutritii cum sanguine facta, ut hac ratione per tenues canaliculos embryonis commodius transire et nutritionem praestare possit: unde recte secundina in foetibus vice fungitur pulmonem, qui in foetu a munere suo vacant, quod identidem in infantis sanguiris partium comminutione earumque unione cum chyloso succo consistit: qua de causa etiam umbilicalis id habet peculiare cum vena pulmonali ut sanguinem fluxilem floridum, et arterioso similem vehat quod omnibus aliis venis negatum est.—F. Hoffmann, t. 1 lib. 1 sect. 11. cap. XIII.

† See the paper above cited on the effects of variolous matter in pregnant women.

During certain seasons, or epidemical states.* At certain times, when the small-pox is epemical, it is mostly violent and very fatal, and at other times it is mostly neither vioent or very fatal.

Such different sorts of small-pox seem to depend upon prevalent peculiar states of ealth of people, rather than on the properties of the atmosphere. When an unfavore epidemical state is discovered, the judicious practitioner will find the question orthy of his contemplation, whether it will not be justifiable to introduce the inoculaon of the cow-pox to supercede the small-pox.

2. *The kind of symptoms and the duration* of the two diseases must be compared toether. If an inoculator could, at his will, command an inoculation of the small-pox, slight local affection, a trifling eruptive fever, and a very small number of eruptions, ere would be no temptation held out on the foree of symptoms to inoculate for the w-pox, because, in this disease, it appears that we are liable, even by inoculation, to oduce a painful phlegmonic inflammation, extensive and very irritating inflammation the skin around the part poisoned, and ulceration of the phagedenic kind. A sufficient mber of cases of the inoculated cow-pox has not been attested to enable us to form an curate judgment of the degree of the symptoms in comparison with those of the inocted small-pox. It does not appear that there is nearly so great a difference between constitutional disorder, or fever, of the inoculated cow-pox, and of the casual cow-x; as between the disorder of the constitution of the inoculated small-pox and the casual all-pox; nor, of course, are the advantages of the inoculated cow-pox so eminently great, mparatively with those of the casual disease, as the advantages of the inoculated all-pox are superior to those of this disease in the casual way. On comparison the symptoms of the inoculated chicken-pox, the inoculated murrain, and the culated measles, with these diseases, in the casual way, by effluvia, the differe is not so great as to raise considerably our expectation of advantages from practice of inoculation. Although Camper and Layard are advocates for inoculation the murrain, Mons. de Berg gives a contrary opinion, declaring, †Que l'inoculation ffre aucuns avantages reels; fur-tout dans les cas ou l'epizootic est tres-meurtriere, onstance qui d'ailleurs est la seule dans laquelle elle puisse etre de quelque utilite.

3. *The subsequent effects on the constitution*, from the cow-pox, must be compared with se from the inoculated small-pox. A disposition to certain diseases, and even diseases nselves, are not rarely brought on by the small-pox; but sometimes also dispositions iseases, and diseases themselves of the most inveterate kind, are removed by the all-pox. In families wherever certain dispositions to diseases are hereditary, and ch diseases are known to have been excited by the small-pox, inoculation for the -pox on this account may be a considerable benefit; but that is on the supposition no diseases, or morbid dispositions, are induced by it. As far as my inquiries have nded, I have found that no such morbid effects have ensued from the cow-pox; but I ehend that many more observations than have hitherto been made, are requisite to rtain this point satisfactorily.

though pits from the small-pox are not a disease, they are at least a deformity, which of the greatest moment for any person to prevent; but which, however, no one certainly guard against, even by inoculation; and as in the cow-pox, no such consees take place, an inducement is afforded to inoculate for this disease.

As the small-pox infection is propagated in the state of effluvia, and by adhering unseen, and even invisibly small quantity, to cloths, furniture, etc.; but as the pox infection is only propagated in a visible quantity, and for the most part only applied to the divided cuticle, the means of avoiding the cow-pox are easy and ously simple. On account of the extremely contagious nature of the variolous n, the extensive dissemination of it by inoculation, and the practice of inoculating e small-pox being only partial, it appears that the mortality by the small-pox has in a greater proportion since than before the introduction of inoculation. And no ity is required to predict, that should the practice of inoculating for the cow-pox become very general amongst young persons, the variolous infection must be ex ished; and, of consequence, that loathsome and destructive disease, the small-pox, own only by name. And this benefit will accrue, without even the alloy of the inction of a new disease, it being plain from the nature of the cow-pox poison that it e easy to avoid and prevent its dissemination.

The cow-pox poison appears to alter the human constitution, so as to render it ceptible of the agency of a different morbific poison, namely, of the variolous, in cing the small-pox. This fact is, I believe, quite a novelty in physiology and

* very mild and innocent endemial small-pox occurred in the practice of Dr. Hicks, of which a history cted by the professional public.

† tre a Mons. Linguet, p. 28, Appendix.

pathology; it indicates a new principle in the mode of prophylatic practice. And we now see upon what principle diseases from various other morbific poisons may possibly be prevented from taking place, such as the measles, ulcerous sore throat, whooping-cough, syphilis, etc., viz. in consequence of destroying the excitability of the constitution to such poisons by the agency of different and perhaps less hurtful ones. Whether the cow-pox preserves the constitution from other morbific poisons, besides the variolous, is an undecided question. This fact also suggests the idea that the economy of live beings may be liable to undergo permanent changes in the state of excitability of each, in respect of certain stimuli, both morbific and innocent ones, which observation has not hitherto discovered. And on account of the unobserved agency of such stimuli, some constitutions are utterly incapable, either permanently or for a limited time, of taking the small-pox, and perhaps other diseases. But if there are in nature means of rendering the human constitution unsusceptible, it must be allowed that it is probable there are also means of rendering it particularly disposed to certain diseases. And it is possible that the same constitution may, in the course of life, undergo repeatedly a temporary state of inexcitability to certain stimuli; but there is no reason to suppose that a state of inexcitability, which would otherwise be permanent, may be removed by certain morbific stimuli.

In the veterinary branch of physic it is a matter of still greater importance to possess the means of rendering the constitution unsusceptible of the agency of the morbific poison which produces the murrain; because,

1. This malady is more destructive when it is epizootic than the small-pox is among human creatures: 2. Because inoculation for it is not nearly so beneficial, a great proportion dying under inoculation.

It seems of small consequence in practice, but it is very important on account of physiology to determine, whether the human economy is rendered unsusceptible of the cow-pox by having undergone the small-pox In the instances related, of people taking the cow-pox who had gone through the small-pox, the observation was not directed with a view to determine, satisfactorily, whether the local affection was certainly attended or preceded by a constitutional affection.

IV. If it be true that the same constitution is liable to undergo repeatedly the cow-pox, to which distemper no one has fallen a victim, practitioners may avail themselves of this means of exciting an innocent fever as a remedy of various disorders, it being a truth, admitted by men of experience, that fevers are occasionally efficacious remedies especially for inveterate chronic maladies, such as epilepsy, hysteria, insanity, St. Vitus dance, tetanus, skin deformities and diseases, etc.

V. Concerning the ætiology of the disease, which is the subject of our inquiry: The cow-pox in the human animal has, in every casual instance of the disease, been so clearly traced immediately to the cow's breasts, affected with the cow-pox, that it would be mispending time to relate, particularly the history of cases, to prove what is asserted. The inoculation with matter from the cow produces the same disease as the casual cow-pox. It appears also that the cow-pox matter of the human animal excites the same disease as the matter from the cow. It has not been determined by experiment, nor by any observation of incidental agency of cow-pox matter; that this matter generated in the human animal, will excite the same disease in the cow; but from the facts just spoken of, probably few persons will doubt that this must be the case. The cow-pox in the brute is either excited by the matter conveyed from a beast laboring under the disease, (in an obvious way by the hands of milkers) to uninfected cows; in which manner one diseased beast may infect an unlimited number of beasts, or the disease is excited by aboriginal cow-pox matter; that is, by matter compounded in the animal economy of the cow, without any matter of the same kind having been applied. The means by the agency of which the animal economy is put into such a state as to compound this peculiar matter are not yet found out. A connection is, however, observed between the disease and the spring season, the autumn, and change from less nutritious to more nutritious food.

It has been concluded by Dr. Jenner that the aboriginal matter is from the matter in the grease of horses, which gains admission through the milkers who handle such greased horses: but this conclusion has no better support than the coincidence in some instances of the prevalence of the two diseases in the same farm, and in which the same servants are employed among the horses and cows. This assertion stands in need of support from other observations. The *experimentum crucis* seems to have been already instituted, without success, namely, the inoculation with the grease matter of the cow's breast by Dr. Jenner. It is to excite further research, that I shall mention how successful my inquiries have been to find the origin of the cow-pox to be in the grease.

1. I have found that in many farms the cow-pox breaks out, although no new-cow has been introduced into the herd; although the milkers do not come in contact with horses; although there are no greased horses; and even although there are no horses kept on the farm.

2. It appears that the cow-pox does not break out under the most favorable circumances for its production, if it be occasioned by the grease. Through the application of inestimable colleague, Dr. Wm. Heberden, I have got much instruction relating to his head from Sir Isaac Pennington. "I* have had, "says Sir Isaac, "Dr. Jenner's ook some weeks, and the particulars stated in it are really astonishing. I have made quiries upon the subject at Cottenham and Willingham; in which two parishes 3005 lch cows are kept, also a great many horses of the rough-legged cart kind, (much lia- to the scratches or grease,) half the parishes being under the plow, and the men be- much employed in milking. But I cannot find that any pustulous eruptions on the uts of the cow, or on the hands of the milkers, have ever been heard of, and what seems prove the negative in this case, I understand inoculation succeeds just as well in these rishes as anywhere else. I cannot find from those concerned in inoculation that shoe- -smiths are less liable to the infection of the small-pox than other people."

Dr. Parr is one of the few men of learning, and acknowledged ability, who has im- ed an unfavorable opinion of the whole of the facts and reasoning of Dr. Jenner. But ny Exeter friend merely opposes reasoning and gratuitous suppositions, to at least e well-attested facts, I do not think anything will be gained by stating, particularly, sentiments on the subject, yet I acquiesce to his judgment, "that the assertion that cow-pox proceeds from the heels of horses is gratuitous." He reprobates the con- sions on this part of the subject in somewhat opprobrious terms, in which, however, Doctor himself argues more on gratuitous suppositions than admitted truths.

Limpidt fluid is always more active than pus, for a wound no longer spreads when matter becomes purulent. If a disease does proceed from the matter of the heel of horse, it is no other than such as occurs in the human subject, namely, topical ulcers, a putrid fomes; since it is probable, (p. 49, Jenner) on Dr. Jenner's own founda- , the eruptions must precede its influence. Men servants seldom milk cows in this try, and when they do, such insufferable dirtiness as to milk with hands streaming the running of a sore heel, would not be tolerated in any milking court in this try. Indeed, I think this publication (Dr. Jenner's) is a libel on his own neighbor- ."

the close of these adverse observations, it is but fair to represent that this opinion ecting the origin of the cow-pox, is not merely that of Dr. Jenner, for Mr. Smith er above cited) says, "Mr. Woodman had a notion of the cow-pox originating from sore heels of horses." And several male servants at the milk farms near London "there was such a notion entertained in several parts in the country, whatever nt be its foundation."

e cow-pox poison, and the hydrophobic poison, are the only specific morbific matter he human animal economy which are clearly proved to be derived from brute ani- ; for there is only small probability on the side of the opinion that the syphilitic n is from the bull‡. the small-pox from the camel‖ and the itch from the dog. The omy then of the human kind, and of cows, resemble, in the particular of being ex- le to a disease, the cow-pox. by a certain specific poison. Whether other animals, ially males of the bovine kind, can take the cow-pox has not been determined by iment or accidental observation. Morbific poisons, which produce specific dis- , act in this way only on one species of animals, except in a few instances, such as ydrophobic and cow-pox poisons. Camper, Ingenhousz and Woodville in vain at- ted to produce the small-pox by inoculation in a number of different brute animals.§ anter failed in attempting to excite the syphilis in a dog by inoculating him with oison of the gonorrhœ and of a syphilitic ulcer. Camper attests that in the most nant epizootic murrain, which spread most rapidly among oxen, yet other an- , such as sheep, horses, asses, dogs, etc., were not infected by associating with the mpered oxen, nor even by feeding with them in the same compartments of a stable. he eruptive contagious disease among sheep in France forty years ago, other spe- f animals which associated with them were not infected.

newly-observed disease, which prevailed among domestic cats in 1796, throughout part of Europe, and even America, did not appear to affect other animals.

Isaac Pennington's Letter, Cambridge, Sept. 14, 1798.

Parr's, M. D., Letter, Exeter, July 22, 1798.

s so diseased are said to be stung.—Sir Isaac Pennington's Letter.

Bruce's Travels and Dr. Woodville's History of Inoculation.

ier, of Chartres, asserts that monkeys, dogs, sheep, rabbits, oxen and other brute animals, are sus- of the small-pox; but his evidence has not the weight of a feather against the contrary authorities. ur asserts that monkeys are never affected with the syphilis, although in England they are subject rofula, and that other animals are equally unsusceptible of the syphilis, although Pauw affirms that dogs are affected with this disease.

These observations may serve to remove the fears of those who apprehend, that in consequence of domesticating brute creatures, we are liable to render their diseases endemial.

VI. As it appears that the cow-pox poison, after its admission into the human constitution, takes effect, or sensibly exerts its agency upon the whole economy, in seven or eight days, it seems probable that it will anticipate, in many instances, the agency of the small-pox poison, if the two poisons be introduced at the same time, or nearly so; in which case the patients should be in future incapable of the small-pox.

If the morbific poison of the varicella, or chicken-pox, were to be inserted at the same time with the cow-pox poison, it is probable also that the cow-pox would suspend the chicken-pox, and perhaps render the constitution unsusceptible of its action in future. But if it be a truth that the rubeolous poison can be inserted by inoculation, and that it affects the constitution in six days, when this poison and that of the cow-pox are introduced at the same time, it is most likely the measles will suspend the cow-pox.

So long as the constitution is under the agency of the cow-pox poison, it is not probable that it will be infected by those morbific poisons whose existence is only known by their effects, (for they operate in too minute a quantity to fall under the notice of our senses) namely, the poison which occasions the influenza, whooping-cough, ulcerous angina, that which occasions the typhus fever, the miasmata and the contagion of intermittent fevers, etc.

To give an instance of the application of facts to practice: if a woman be far advanced in pregnancy, and exposure to small-pox infection has been, or is unavoidable, in that case it will be of vast importance to avert the present impending danger from the female. Under such a circumstance the temptation to inoculate for the cow-pox will be felt by the practitioner. And provided the inoculation be instituted in not more than six or seven days after exposure to the variolous infection, it should, according to principle, pretty certainly preserve the patient from small-pox; or if it be done within ten or twelve days, it should frequently answer the purpose. For the variolous poison lies within the human body, most frequently, fifteen days, and often four or five days later before its general agency is perceived; whereas, the cow-pox poison acts upon the whole constitution in seven or eight days after its admission.

VII. The cow-pox poison is, according to the present facts, totally different in its nature and effects from every other morbific poison, both of cattle and human creature. It is not necessary to enter minutely into the distinguishing characters of it as it appears in cows, as these will be collected from the history of the disease. I think it right just to mention that care should be taken not to confound the cow-pox with the common wart eruptions and inflammations ending in scabs, which affect the paps only, or at most the paps and the udders. It must also be recollected that the cow-pox is quite different from the diseases of cattle which are attended with eruptions of the skin in general, such as take place in the murrain, or *pestis bovilla*, already spoken of, on which eruptive diseases more has been written by the Italian, French and Dutch physicians than by the English.

On account of the notion which, by some, is entertained, that the cow-pox infection of the same nature as the variolous, it may be useful to point out the great difference between them.

1. The cow-pox poison, introduced by inoculation, affects the whole constitution at the same time in the same degree and manner as when admitted in the casual way; and if the local affection be more severe in the casual than in the inoculated way, it seems to be owing to the structure of the part, namely, the thick cuticle in the palms of the hands.

2. The cow-pox poison only affects the constitution through the intervention of the part poisoned.

3. This morbific poison produces no eruption or inflammation, but of and near the part to which the poison is applied.

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* Gli assistenzi a'bovi ammalati e molt' altri uomini degni di fede m'attestarono d'aver osservati, in alcuni tumori crudi in diverse parti del corpo con lingue aride, nere e tagliate, in altri aver veduti tumori maturate.—P. A. Michelloti, p. 12, 1711.

La terza osservazione fu circa alcuni buovi, che dimorarano in ima stalla come alle pecore: due di cacciarono d' alla cute certi tubercolletti.—Padre Boromeo, p. 48.

Annis 1713, 1714, in nostro Ferrariensi Ducatu, lues contagiosa boum, &c. Correpti enim boves cibo respuebant; aures subito collapsæ procidebant: pili erigebantus; tremor pene universalis aderat: oculi lacrymabant: per nares multa lymphæ copia exibat; alvus solvebatur: et in aliquibus pustulæ sub cute prodibant, ita ut crederent aliqui Variolis boves ipsos assici; tandemque brevi septem dierum spatio interibantur.—J. Lanzoni, t. 20, b. 202.

Maculis denique et pustulis infecta cutis, adeo ut quibusdam, in mentem venerit cogitare boves non ut nunc res est, sed ipsis pustulis quas Variolas vocant interire.—J. M. Lancisi de bovilla peste.

Schreiben an die Generalstaaten betreffend die Einimpfung der Viehseuche geschrieben den 16 Fe 1770.—Camper von Einimpfung der Kindviehseuche, ihren Vortheilen und Bedingungen.—Campers liner Gesellschaft.

The cow-pox poison from the human subject will, in all probability, infect the cow the cow-pox, which the variolous poison will not.

It is asserted that a person may have the cow-pox who has had the small-pox.

The local pustulous eruptions in the cow-pox are rather in the nature of vesicles, hylyctænæ, than purulent eruptions, and the ulceration is apt to be of the phagedenic kind.

The tow.pox infection is not propagated in the state of effluvia or gas.

Cow-pox matter applied to the eyes, lips and various other soft parts, or to any parts which are punctured, or wounded, in persons who already have had the cow-pox, or when ill of the disease, will excite the peculiar local affection from this poison, and perhaps fever.

III. There are some who are not certain whether or not they have gone through the small-pox, yet they have such a dread of the disease as not to submit even to inoculation for it. To such persons the inoculation for the cow-pox as a substitute for the small-pox may prove a happy discovery.

Some who have never gone through the small-pox have been repeatedly inoculated for the small-pox, and also been exposed much to the infection of it in the casual way, yet could not be infected. Persons so circumstanced to be more secure, may be inoculated for the cow-pox.

Such is the representation which I shall lay before the public of the benefits likely to accrue to human society from inoculation for the cow-pox. I shall be no better contented with those who will consider the facts to be already completely demonstrated, than with the opposite extreme opinion, that the whole of the prospects displayed are entirely Eutopian. The fortunes of the new proposed practice cannot, with certainty, be told at present by the most discerning minds. More instances are required to establish practical and pathological truths. Without assuming pretensions which, I think, unwarrantable, the number of instances farther requisite can not be stated; but one may safely assert that well directed observation in a thousand cases of inoculated cow-pox would not fail to produce such a valuable body of evidence as will enable us to apply our knowledge with much usefulness in practice, and establish, or at least bring us under the establishment, of some truths.

They who take a part in the present inquiry must not expect to escape detraction. But such a prospect will not divert him from his path who labors in the culture of science for the satisfaction of his own mind, well knowing that it argues egregious ignorance of what is passing in the world, to do so from any other motive.

COMMUNICATIONS RECEIVED AFTER THE PRECEDING SHEETS WERE PRINTED, AND ADDITIONAL OBSERVATIONS.

Mr. Rolph, Surgeon in Peckham, practiced physic nine years at Thornbury in Gloucestershire. During two of these years he was the colleague of the late Mr. Grove, who had been a medical practitioner at Thornbury for near forty years. The greater part of the facts above stated, relating to the cow-pox, are familiarly known to Mr. Rolph from his own observation, and from the experience of Mr. Grove.

Mr. Rolph tells me, that in Gloucestershire the cow-pox is frequently epizootic in the dairy farms in the spring season. It especially breaks out in cows newly introduced into the herds. When a number of cows in a farm are at the same time affected, the infection seems generally to have originated in the constitution of some one cow, and before the farmer is aware of the existence of the disease, the infectious matter is probably conveyed by the hands to the teats and udders of other cows; hence they are infected. For if the disease in the cow first affected be perceived in a certain state, and obvious precautions be taken, the infection does not spread, but is confined to a single beast. Whether the morbific poison is generated in the cow first diseased in a given farm, *de novo* from time to time, and disseminated among the rest of the herd; or, like the small-pox poison, is only communicated from animals of the same species to one another, is not ascertained. No cow has been known to die or be in danger from this disorder.

A great number of instances of the cow-pox in milkers had fallen under Mr. Rolph's observation, and many hundreds more under that of his late partner, Mr. Grove; but not a single mortal, or even dangerous, case had occurred. The patients were ordinarily affected with a slight fever for two or three days, and the local affection was so slight that the assistance of medical practitioners was rarely required. He had no doubt that the inoculated cow-pox was attended with as little pain and uneasiness as the ordinary cases of inoculated small-pox.

Mr. Rolph says, there is not a medical practitioner of even little experience in Gloucestershire, or scarce a dairy farmer, who does not know from his own experience, or that of others, that persons who have suffered the cow-pox are exempted from the agency of the variolous poison.

The late Mr. Grove was a very extensive small-pox inoculator, frequently having 200 or 300 patients at one time, and the fact of exemption now asserted had been long before his death abundantly established by his experience of many scores of subjects who had previously labored under the cow-pox, being found unsusceptible to the small-pox, either by inoculation or by effluvia.

While Mr. Rolph practiced at Thornbury, he thinks not fewer than three-scores instances of failure in attempting to produce the small-pox by inoculation occurred in his own practice, all of which were persons who had been previously affected with the cow-pox. In almost all of these cases the uninfected persons associated with those who took the small-pox, and many were repeatedly inoculated. Although Mr. Rolph has not, in his recollection, any instances of people taking the small-pox who gave admissible evidence of their having labored under the cow-pox, he thinks such cases may, and have indeed occurred to others, where the cow-pox had been *only* local, it being requisite that the whole constitution should be affected in order to destroy the excitability to the variolous poison.

Mr. Rolph declared that his confidence in the efficacy and safety of inoculation for the cow-pox was such that he regretted he could not, at present, procure cow-pox matter to inoculate two of his own children who had not yet had the small-pox. This measure is, however, determined upon.

As a particular instance, Mr. Rolph related the following: A soldier's wife, while in the small-pox, was accidentally in the company of several farmers at an ale-house in Thornbury. Two of the company who had gone through the cow-pox, but not the small-pox, were not infected by the variolous infection; but three others, who had not labored under the cow-pox, took the small-pox.

Mr. Rolph's mind was not satisfied that a person could be constitutionally affected by the cow-pox poison more than once, but he had no doubt that the local affection might be produced repeatedly. Neither did he certainly know that a person was unsusceptible of the small-pox who had been constitutionally affected by the cow-pox.

Mr. Rolph, in a letter to Dr. Beddoes, dated June 10th, 1795, communicated the following observations. Speaking of a man who could not be infected, although he was repeatedly inoculated for the small-pox, and although he lived in the same room with another man who died of the small-pox, Mr. Rolph says, "it is worthy* of remark that this man had some years before a complaint incident to cows, and commonly called the cow pox, a malady more unpleasant than dangerous. It is generally received by contact in milking. In the human species the complaint is sometimes local, at other times absorption takes place, and the glands in the course of the absorbents become indurated and painful. When this is the case, *I have learned from my own observation, and the testimony of some old practitioners, that susceptibility to the small-pox is destroyed.* Some advantage may probably, in time, be derived from this fact."

LETTER FROM DR. JENNER TO DR. PEARSON.

CHELTENHAM, 27th September, 1798.

My Dear Sir—The perusal of your proof sheets has afforded me great pleasure, both from the handsome manner in which you mention my name, and from the mass of evidence which has poured in upon you from different countries in support of the fact which I so ardently wish to see established on a steady and durable basis.

Your first query respecting the fœtus in utero I can not resolve.

With respect to your second, you may be assured that a person may be repeatedly affected, both locally and generally, by the cow-pox, two instances of which I have adduced, and have many more in my recollection. But, nevertheless, on this important point, I have some reason to suspect that my discrimination have not been, till lately, sufficiently nice. I must observe to you, that what the constitution feels from the absorption of the virus†, is of a mild and transient nature, but the sores (which sores, when casual, are often numerous, and attended with such soreness and inflammation) are sufficient of themselves to occasion much disorder in the system. Certain it is, that the skin is always subject to the ulcerative effects of the virus, but whether the constitution can repeatedly feel the primary effects of it, I have experiments in view to determine. Let me here call your attention to a similarity between the small-pox and the cow-pox. The symptoms of absorption first disturb the system, and, secondly, the system feels the consequences of the local sores. Exactly so with the cow-pox; and as the cow-pox inflammation is always of the erysipelatous kind, when it spreads over the skin to any great extent, it produces symptoms not unlike the confluent small-pox.

It is painful to me to tell you, that I have not an atom of the matter that I can depend upon for continuing the experiments. Mr. — ———, when he inoculated the boy, did not take matter early enough for

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* See the queries of Dr. Beddoes concerning inoculation, subjoined to his translation of Gimberne's method of operating for the femoral hernia.—London, Johnson, 1795.

† I use this expression as the common language of the day, without consenting to the truth of it.

pustule to secure its efficacy.—for after it has lost its limpid quality, and becomes pus, I fear its specific cts cease. Much precaution is therefore necessary in the progress of the inquiry; and this is my grand , that the discovery may fall into discredit from a want of that attention, in conducting the experi- nts which the subject requires. For example, a person may conceive he has the cow-pox matter o his lancet, on, in fact, there may be only a little putrid pus—with this he scratches the skin and excites disease;— patient is afterwards subjected to the insertion of the variolous poison, and unquestionably will have disease. Thus a delusive inference will be drawn, at once hurtful to the cause, and particularly injuri- to me. However, truth must appear at last, and *from your researches, its appearance will certainly be edited.* I remain, yours very truly, E. JENNER.

Abstract of a Letter from Mr. Fewster, Surgeon in Thornbury, dated October 11th, 98, to Mr. Ralph, Surgeon in Peckham.

n the spring of the year 1768 I came to live at Thornbury, where I have resided ever since. In that y year, from the following occurrence, I became well acquainted with the disease called cow-pox. The Mr. Grove and myself formed a connection with Mr. Sutton, the celebrated inoculator; and to inocu- for the small pox, we took a house at Buckover. We found in this practice that a great number of pa- nts could not be infected with the small-pox poison, notwithstanding repeated exposure under most orable circumstances for taking the disease. At length the cause of the failure was discovered from case of a farmer who was inoculated several times ineffectually, yet he assured us he had never suf- d the small pox, but, says he, "*I have had the cow-pox lately to a violent degree, if that's any odds.*" took the hint, and, on inquiry, found that all those who were uninfectable had undergone the cow-pox. I municated this fact to a medical society, of which I was then a member, and ever afterwards paid par- lar attention to determine the fact. I can now, with truth, affirm *that I have not been able to produce small-pox, in a single instance, among persons who have had the true cow-pox*, except a doubtful case ich you are acquainted with. I have, since that, inoculated near two thousand for the small-pox, ongst whom there were a great number who had gone through the cow-pox; the exact number of these I not tell, but I know that they all resisted the infection of variolous matter.

With regard to your questions:

As to danger from the cow-pox. In the course of thirty years I have known numberless instances of disease, but never knew one mortal, or even dangerous, case.

Is a person susceptible of the cow-pox more than once? I can not answer this question.

Is the cow-pox, in the natural way, a more or less severe disease than the inoculated cow-pox? I nk it is a much more severe disease in general than the inoculated small-pox. I do not see any great ad- tage from inoculation for the cow pox. Inoculation for the small-pox seems to be so well understood, t there is very little need of a substitute. It is curious, however, and may lead to other improvements*.

Have you ever known any pregnant woman labor under the cow-pox? Yes, many, but it *never pro- ed abortion*. The state of the foetus I can not speak of.

Are cows affected at certain times more than at others? They are especially effected from Febru- to May, when there is the greatest number of greased horses.

can not procure any cow-pox matter this season.

From Mr. Bird to Dr. Pearson, October 16, 1798.

Mr. G. G. Bird, of Hereford, who is now attending medical lectures in London, tells Dr. P. that he has y often seen the cow-pox in cows and human creatures near Gloucester; that it attacks the same person eatedly, and once the third attack was observed to be more severe than the preceding ones, but ordina- the reverse is the fact. It appears with red spots on the hands, which enlarge, become roundish and purate, tumors take place in the armpit, the pulse grows quick, the head aches, pains are felt in the back limbs, with sometimes vomiting and delirium. It is most common in a wet spring. No one dies of the ease.

Mr. Currie, of Chester, informs Mr. Thomas that the disease called cow-pox is unknown to the medi- practitioners and farmers in Cheshire.

Dr. Richard Pearson, of Birmingham, in his obliging letter of the 26th September last, says, "From e united evidence, (that of medical persons and farmers) I think that it may be inferred that the disease, ich Dr. Jenner calls variolæ vaccinæ, is not epizootic in the counties of Warwick, Worcester and ford."

Mr. Woodville acquaints me, "that not being able to procure cow-pox matter he is making trials with ase matter from which no doubt, some useful information will be obtained."

Extracts of a letter from Mr. Thomas Wales, surgeon at Downham, Norfolk, dated tober 18, 1798, to Dr. Pearson. I shall endeavor to give you satifactory answers to ur queries.

revious to my conversation with Dr. Redfearn, I had no knowledge of the disease called cow-pox, nor was nown to any medical practioner in this district. But on inquiring at the dairy farms, I have got much rmation concerning the disease. I this day saw two persons who have had the cow-pox. One of them, an above sixty years of age, who has been a milker all his life, knows the disease very well by the name pap pox, having himself experienced the disorder a great many years ago. He remembers that on that asion he was sick at the stomach and otherwise ill for two or three days. The eruption on his hands considerable, and the fingers were swollen; probably owing to improper applications the places healed vly, and left scars, which are evident at this day; and when the hands are very cold, these scars are of a t cast. He had not gone through the small-pox before he had the cow-pox nor has he had the small-pox e this disease, although he has been repeatedly inoculated.

he other case above mentioned, is that of a young woman, who had the cow-pox some time ago but never fered the small-box although she has been several times inoculated.

here are, I find, many other instances, of persons who have gone through the cow-pox, and who have been able to take the small pox, either naturally, or by inoculation.

s the public in this part are not at all aware of the advantages of inoculation for the cow-pox, there are instances of this mode of producing it.

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* I have stated the writer's opinion of inoculation for the cow-pox, in obedience to a law imposed on my- of not suppressing any part of the evidence communicated, however differently I might reason on the .—Note by the author of this inquiry.

I do not find that any person has had the cow-pox more than once, that is a fever with the local affection more than once; but the local affection without fever, has occurred in the same person repeatedly: I have met with two cases, in which the matter of the cow-pox, by being applied to the eyes, destroyed the power of vision, from the opacity of the cornea so produced.

No person has been known to die, or even to be in danger, with the cow-pox, although the axillary glands have been much affected, and the sores on the hands have healed with difficulty. I have not met with a case of a woman who has gone through the disease during pregnancy.

No instance has fallen under my observation, of a person who has gone through the cow-pox after having had the small-pox.

With regard to cows they are subject to the cow-pox more than once. It comes on in the spring, when they first begin to taste luxuriant food, but not uniformly every year. One farmer informed me that he thought it broke out especially when the cows were fed with turnips in autumn; but I do not depend much on this observation."

REMARKS ON THE TERM VARIOLÆ VACCINÆ.

For the sake of precision in language, and of consequence, justness in thinking; and considering that there is no other way of disabusing ourselves from many of the errors in physic, but by the use of just terms; it is not unworthy of our attention to guard against the admission of newly appropriated names which will mislead by their former accepted import.

Variola is an assumed Latin word, and its meaning will be popularly understood in the English tongue, by saying that it is a name of a disease, better known by another name, the small-pox. Granting that the word variola is a derivative from *varius* and *varus* used by Pliny and Celsus to denote a disease, with spots on the skin the etymological import of variola is any cutaneous spotted distemper; but one of the most formidable and distinct of the cutaneous order is what is called the small-pox, and therefore, as I apprehend the name variola has been used technically to signify this kind of spotted malady, and no other.

Now as the cow-pox is a specially different distemper from the small-pox, in essential particulars, namely in the nature of its morbific poison, and in its symptoms; although the cow-pox may render the constitution not susceptible of the small-pox; it is a palpable *catachresis* to designate what is called the cow-pox, by the denomination *variolæ vaccinæ*; for that is to say, in English, cow small-pox, and yet the cow is unsusceptible of infection by the variolous poison.

To the name cow-pox or better, perhaps *cow-pocken** in our language, I think no reasonable objection can be urged. According to the more distinct and lucid arrangement of cutaneous distempers, by Dr. Willan,† the cow-pox belongs to the order entitled *pustulas*; the word *pock* is known to signify *pustule* and the prefix cow denotes the only animal in which the morbific poison has its origin. Further; if hereafter by the practice of universal inoculation, the human animal should be much more abundant, and better known source of this morbific matter than the brute animal, it is fit that the latter, to which obligation will be owing for an inestimable benefit, should live in the grateful memory of mankind, as ought also the name of Jenner who will be so great a public benefactor.

QUERIES.

It may save some persons the trouble of thinking, and time, if a set of questions is stated; which will serve to guide observation in the acquisition of facts belonging to the subject of inquiry. For this purpose the following queries are proposed:

WITH RESPECT TO BRUTES.

1. If a distemper of cows has been noticed, called the cow-pox, or by any other name in which the beasts, especially the paps, are affected with pustulous, and generally pustule, or livid eruptions and sores, by which the hands of milkers are infected; what are the symptoms?

2. Can any connection be traced betwixt this disease and the grease of horses' heels? between the disease and particular kinds of food and water? between it and any particular state of the athmosphere? between it and any particular season?

3. Is the same liable to the disease more than once?

4. Has any cow ever appeared to die of this disease?

5. Is the cow susceptible of the cow-pox by the inoculation of the breasts, with grease matter of horses?

6. Are males of the ox kind, or other different kinds of brutes, susceptible of the disease by inoculation with cow-pox matter of cows?

7. Have cows in a state of pregnancy been observed to be affected with this distemper?

8. Is the cow susceptible of the disease by inoculation of other parts beside the breasts?

9. Is the cow-pox matter of human creatures capable of producing cow-pox in cows?

WITH RESPECT TO HUMAN CREATURES.

1. What parts are affected, and what are the symptoms of the distemper when contracted in the casual way?

*Instead of the modern orthography small-pox, etc., in which *es* and *cks* are denoted by *x*, it will be, perhaps, thought preferable to follow the original orthography *pock* with its plural *pocken*, as the Germans still do; from whose language we have received the words.

†Description and treatment of cutaneous disorders. Order 1. Pustulous eruptions on the skin, Robert Willan, F. A. S. 4to. with plates, Johnson, 1798.

. Has any person been supposed to be in danger, or to have died of the disease?
. Is the whole constitution disordered previously, or *only at the same time* the pustules ak out? Does the disorder of the constitution disappear on the appearance of the tules? Does the same, or a different disorder of the constitution again appear; l under what circumstances in the course of the disease?
. If in the course of the disease, when there is no disorder of the whole constitution, infectious matter of the cow or of the human patient already laboring under the -pox be applied to fresh parts, does a disorder of the whole constitution arise, as well a local affection; and of the same kind as those which have already taken place?
. Is the same person susceptible of the cow-pox local affection, and fever, or disorder he whole constitution more than once or only of the local affection more than e? In the instances in which the disorder of the whole constitution was said to e occurred more than once, is it not probable that in one case only the specific fever the infection occurred, and in the others a different disorder of the whole constitu-, such as was merely from the irritation of the local affection?
. Is the local affection of the same nature on a second, or on farther attacks in the e as on the first?
. In the instances of cow-pox in persons who had gone through the small-pox, were local affection and disorder of the constitution of the same nature as in persons who not labored under the small-pox?
. Has it been observed that a person has ever taken the small-pox after having gone ugh the cow-pox? In the instances in which the small-pox was said to have taken e, was it certain that the preceding cow-pox was attendant with its specific fever, as there only a local affection, or at most, was there only disorder symtomatic of the l affection?
. Does the cow-pox render the human constitution unsusceptible of any other disease des the small-pox; or on the contrary, increase its susceptibility to any particular ase?
. What are the effects of cow-pox on pregnant women?
. In the inoculated cow-pox is the fever less considerable than in the casual way?
. In the inoculated cow-pox is the local fever slighter and of shorter duration than e casual cow-pox?
. How long after the insertion of the matter is it before the constitution is affected?
. If a person were to be inoculated at the same time with cow-pox and variolous er, which disorder would appear first, or what other effects would be produced?
. If the cow-pox morbific matter be applied to a secreting membrane, e. g. to the hra, will it produce a gonorrhœa or pustulous sores?
. Does the disease appear to injure the constitution, by producing or exciting other ases?
. Does the disease appear to eradicate any other disease already present?
. Does the mildness or severity of the inoculated cow-pox depend upon the quantity e matter inserted, or on the wounds inflicted for inoculation?
. Does the cow-pox matter produce the disease as certainly in its dried as its fluid ; and when old as when recent; and with equal mildness?
. Are there any particular states of the constitution in which cow-pox is particu- mild: or on the contrary, severe; as after the measles, whooping-cough, etc.?
. Are there particular idiosyncrasies in families or individuals, which influence the pox, as is the case in the small-pox?
. Is the inoculation of the cow-pox equally successful in infancy, manhood, and de- t age?

swers to the preceding questions will be principally obtained by inoculation for the pox, of which there are many opportunities in provincial situations; which prac- t is one of the chief objects of this publication to encourage.

. Do certain epidemic states appear to prevail, which influence this disease?

S.—Extracts of a letter from Dr. Fowler to Dr. Pearson, dated Sarum, October, 24,

Dear Sir—The disease called cow-pox is known in this neighborhood only to a few farmers, but they stand that it is a preservative from the small pox. This morning, Anne Francis, a servant girl, aged s, was brought to me: she informs me, that some years ago bluish pustules arose on her hands, from g cows diseased by the cow-pox. These pustules soon became scabs, which falling off, discovered ting and very painful, which were treated by a cow doctor, and were long in healing. Some milk ue of the diseased cows having spurted on the cheek of her sister, and on the breast of her mistress, ed on these parts of both persons; pustules and sores, similar to her own on her hands. None of

these three had suffered the small-pox, nor have they gone through it since that time, although they hav been much exposed to the infection; and the sister above mentioned has been inoculated three times for th small-pox. The cow doctor who attended these three women said, he would forfeit his life if any of the should afterwards have the small-pox.

With sincerest good wishes for the success of this and all your undertakings,

I am, etc., etc. R. FOWLER,

Note—Mr. Hughes' letter, dated Stroud-Water, Gloucestershire, October 27, 1798, to Mr. Bliss, Surgeo Hampstead, has been just sent to the author, in answer to his queries. Unfortunately this valuable lett cannot now be published. It especially confirms, by a number of instances, the facts of the safety of t cow-pox, and of its producing unsusceptibility of the small-pox.

FINIS.

REPORTS OF A SERIES OF INOCULATIONS

—FOR THE—

VARIOLÆ VACCINÆ, OR COW POX;

—WITH—

REMARKS AND OBSERVATIONS ON THIS DISEASE, CONSIDERED AS A SUBSTITUTE

—FOR—

THE SMALL-POX,

BY WILLIAM WOODVILLE, M. D., Physician to the Small-Pox and Inoculation Hospitals.

LONDON:
Printed and Sold by James Phillips & Son, George Yard, Lombard street, 1799.

TO THE RIGHT HONORABLE SIR JOSEPH BANKS, BART.

Knight of the Bath, President of the Royal Society, etc.:

Sir—The great attention with which you honored some of the first cases described in the following sheets has induced me to hope, that on account of the whole, though not affording the satisfactory evidence upon the subject that I expected, may still not be entirely unacceptable to you.

I have the honor to be with the utmost regard, your obedient servant,

W. WOODVILLE.

Ely-Place, May 16, 1799.

REPORTS, ETC.

Last summer Dr. Jenner presented to the public* several curious and interesting facts, respecting a disease known to dairy farmers by the name of cow-pox. The most important of these is, that persons who have been effected with this distemper are thereby rendered as secure from the effects of the variolous infection as if they had actually undergone the small-pox.

However extraordinary this circumstance may appear, it is supported by numerous experiments made under Dr. Jenner's inspection, and also by concurrent testimonies since collected by Dr. Pearson,† who with much laudable zeal and industry instituted a further inquiry into the subject.

Dr. Jenner, who from his situation in Gloucestershire, had many opportunities of seeing the cow-pox, supposes it to originate from the grease in horses, and to take place in the following manner:

"In this dairy country a great number of cows are kept, and the office of milking is performed indiscriminately by men and maid servants. One of the former having been appointed to apply dressings to the heels of a horse affected with the grease, and not paying due attention to cleanliness, incautiously bears his part in milking the cows, with some particles of the infectious matter adhering to his fingers. When this is the case, it commonly happens that a disease is communicated to the cows, and from the cows to the dairy-maids, which spreads through the farm, until most of the cattle and domestics feel its unpleasant consequences. This disease has obtained the name of cow-pox. It appears on the nipples of the cows, in the form of irregular pustules. At their first appearance they are commonly of a palish blue, or rather of a color somewhat approaching to livid, and surmounted by an erysipelatous inflammation. These pustules, unless a timely remedy be applied, frequently degenerate into phagedenic ulcers. The animals become indisposed, and the secretion of milk is much lessened. Inflamed spots now begin to appear on different parts of the hands of the domestics employed in milking, and sometimes on the wrists, which quickly run on to suppuration, first assuming the appearance of small vesications, produced by a burn. Most commonly they appear about the joints of the fingers, and at their extremities; but whatever parts are affected, if the situation will admit, these superficial suppurations put on a circular form, with their edges more elevated than their centre, and of a color distantly approaching to blue. Absorption takes place, and tumors appear in each axilla. The system becomes affected—the pulse is quickened; and shiverings, with general lassitude and pains about the loins and limbs, with vomiting, come on. The head is painful, and the patient is now and then even affected with delirium. These symptoms, varying in their degree of violence generally, continue from one day to three or four, leaving ulcerated sores about the hands, which, from the sensibility of the parts, are very troublesome, and commonly heal slowly, frequently becoming phagedenic like those from whence they sprung.

"Thus the disease makes its progress from the horse to the nipple of the cow, and from the cow to the human subject."

Since no fatal effects have ever been known to arise from the cow-pox, even when impressed in the most unfavorable manner; and since this disease appears from numerous instances to leave the constitution in a state of perfect security from the infection of the small-pox, Dr. Jenner infers, that the employment of the matter of the cow-pox would be preferable to that of the small-pox, for the purpose of inoculation. In confirmation of his opinion, it may be observed, that he relates the cases of seven or eight persons whom he successfully inoculated with this new antidote to the variolous poison.

Possessed of the above information I confess I became very anxious to try the effect of inoculating the matter of this singular disease, and as trials could be made not only with safety, but also with the prospect of advantage, I conceived it to be a duty that I owed to the public in my official situation at the Inoculating Hospital to embrace the first opportunity of carrying the plan into execution.

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*See an inquiry into the causes and effects of the variolæ vaccinæ, a disease discovered in some of the western counties of England, particularly Gloucestershire and known by the name of the cow-pox.

†See an inquiry concerning the history of cow-pox.

Unfortunately, however, at the time Dr. Jenner's publication appeared, no cow-pox matter could be procured, for the disease had then become extinct; nor was it expected to return till the spring, the period at which it usually affected the cows. But conceiving that the distemper might be produced by inoculating the nipples of cows with the matter of grease of horses, in conformity with the opinion above stated I proceeded to try whether the cow-pox could be actually excited in this manner.

Numerous experiments were accordingly made upon different cows, with the matter of grease, taken in the various stages of that disease, but without producing the desired effect; my friend, Mr. Coleman, the ingenious professor at the Veterinary College, likewise made similar trials, which proved equally unsuccessful.* Neither were inoculations with this matter, nor with several other morbid secretions in the horse, productive of any effects upon the human subject.

I am aware, that the experiments I allude to, may, by some, not be deemed wholly conclusive from a supposition that the peculiar predisposition of the cows, necessary to render the inoculations efficient, might not exist at the time the matter was applied to their nipples.

But I have also other reasons for believing that the cow-pox does not originate from any disease of the horse. In the first place, the affirmative opinion is confessedly gratuitous. A horse, at a certain season of the year, becomes affected with the grease, and the cows at the same time are affected with cow-pox; and from this coincidence the two diseases have been considered as cause and effect. Yet is it not equally probable that the same temporary causes which produce a certain disorder in one animal may so operate upon another animal of a different genus as to excite another disorder? Therefore, though the cow-pox may break out among the cows at the time that the grease affects the horses kept on the same farm, yet the consecutive appearance of these diseases affords no proof of their connection; while, on the other hand, I can adduce instances in which the former disease has broken out under such circumstances as render it highly improbable, if not impossible, that it should have been caused by the latter.†

But, though Dr. Jenner seems to have been misled with respect to the origin of the cow-pox, still his facts and observations concerning its effects upon mankind are not the less valid and important; nor did I feel the less desirous to try how far they would be invalidated or confirmed by a more enlarged experience than he had the opportunity of acquiring.

Towards the latter end of January last I was informed that the cow-pox had appeared among several of the milch cows kept in Gray's Inn Lane, and upon examination of these, three or four were discovered to be affected with pustulous sores upon their teats and udders. These pustules corresponded in their appearance with the representation and description of the genuine cow-pox, as given by Dr. Jenner. I should not, however, call the surrounding inflammation erysipelatous; it was evidently an indurated tumefaction of the skin. The number of cows kept at this place was at this time about two hundred, and about four-fifths of them were eventually infected.‡

The hands of three or four persons became sore in consequence of milking the cows thus affected; and one of them, Sarah Rice, exhibited so perfect a specimen of the disease that I could entertain no doubt of its being the true, and not the spurious, cow-pox.

Several gentlemen who I knew would be highly gratified by seeing the disease as it appeared upon the girl's arm, were invited to meet me at the cow-house on the following day, when Lord Summerville, Sir Joseph Banks, Sir Wm. Watson, Drs. Simmons, Pearson, Willan, and others, attended. This was on the 24th of January last, and Sarah Rice had then been affected five days. The appearance of the disease upon the girl's hand and arm very much resembled the representation of it given in the first plate of Dr Jenner's pamphlet At first a small tumor or circular vesication appeared between her fingers; next day she discovered three more like the first, namely, one upon her finger another at the wrist, and also one upon the middle of her forearm. The two first nevebecame larger, and exactly resembled the vesicle upon the finger in the plate alluded to that at the wrist was now about one-third of an inch in diameter, and the other upon her arm was still larger; they were both of a circular form, not depressed at the centre and had a simple inflammatory border; the pellicle of both these tumors, but morespecially of the larger, had at this time acquired a blue color, which was deepest abouthe centre. This blueness had come on during the last twenty-four hours: for I haseen the tumors the preceding day, when this colored tinge could scarcely be perceive

*Mr. Coleman caused one of his cows to be inoculated in its teats with cow-pox matter and that takefrom a variolous pustule, without effect; but the former matter, after being regenerated by the human subject, produced the disease in the cow.

† Those who wish for further information on this subject, may consult Mr. Simmons' Experiments andDr. Pearson's Inquiry, pp. 83-84.

‡ Those cows which were not in milk escaped the disease.

nd that too only in the largest; at that time also it contained a colorless fluid, but now s contents appeared brownish. The girl now perceived an uneasiness at the axilla; and afterwards learned that this symptom was followed by a slight headache. None of the nmors were painful, and they all gradually went off without producing ulceration.

Sarah Rice had undergone the small-pox when a child; and the only reason why she as more affected by milking the diseased cows than the other milkers were, was that er hands and arms were more red, swollen, and disposed to chap than theirs; though it oes not appear that there were any abrasions of the cuticle of those parts of the skin hich were infected by the cow-pox.

Before relating the cases of inoculation with the matter of cow-pox, I have judged it roper in the first place briefly to state what are the local effects produced by inoculating variolous matter, so that the progress of the infection in both cases may be compared, nd the subject of inoculation at large, be better understood.

In cases wherein inoculation of the small-pox proves effectual, a small particle of variolous matter being applied by a superficial puncture of the skin, usually produces in he course of three or four days, or sooner, a little elevation of the punctured part, discoverable by the touch, and a red speck distinguishable by the eye. From this time the edness advances in a circular form, more or less rapidly, according to the constitutional ircumstances of the patient; and the first effect of this superficial inflammation is the rmation of a vesicle upon its centre, which usually appears between the fourth and eventh day after the inoculation. The extent of the vesicle is generally found to bear me proportion to the intensity of the inflammation; and contains a limpid fluid, by e absorption of which the small-pox is produced. The vesicle soon bursts, and the entral part of the puncture becomes depressed, and often of a dark hue; which appearnces, together with the marginal inflammation, continue to increase till the eruptive mptoms subside, when the edges of the depressed part begin to swell with a purulent uid, and the inflammation gradually recedes.

Thus it appears that the variolous matter, first inserted by the puncture, like that of her morbid poisons, is not capable of being immediately absorbed, but lodges in the kin, and there excites an inflammatory process, by which a new matter, producing the isease is generated*. It would seem also that this process is carried to a greater or less xtent in different persons before the matter enters the absorbents, owing probably to ne greater or less aptitude in these vessels to receive it; hence we find the local inflamation, in some cases, considerably advanced before the system becomes affected, while others the eruptive symptoms supervene when it appears to have made but very little rogress; and, therefore, though the eighth day after the inoculation, proves the usual riod at which the patient feels indisposed, yet this frequently happens much sooner or ter, and the progress of the cow-pox infection will be found to take the same latitude.

Monday, January 21, 1799, I took the matter of cow-pox in a purulent state upon the ats of a cow, with which I immediately inoculated seven persons by a single puncture the arm of each, or rather by scratching the skin with the point of a lancet till the strument became tinged with blood.

FIRST CASE.

Mary Payne, a child, two years and a-half old, of a strong, robust constitution. Third Day.—The inulated part was evidently ulcerated and slightly inflamed. Sixth Day.—The local tumor exnded to about one-third of an inch in diameter, and was nearly of a circular form, with its ges more elevated than the centre, and, with the surrounding inflammation, not greater than usual in cases of inoculated small-pox. The vesicle, upon the middle of the tumor, was now ry large, and distended with a limpid fluid, some of which I took upon a lancet and with it inoculated other person, John Talley. She appeared dull and drowsy, and her pulse was quicker than usual. She d no appetite for food, and had been very thirsty since yesterday. Eighth Day.—The redness surround the tumor seems returning; and the thirst and other febrile symptoms are much abated: but she ill appears lifeless and somewhat indisposed. Eleventh Day.—She is perfectly free from complaint; the oculated part is scabbing, but surrounded with a hard tumefaction of a bright red color. She was this day oculated with variolous matter. Fifteenth Day.—She has no ailment. The variolous inoculation proced considerable inflammation, which gradually disappeared after the fifth day.

SECOND CASE.

Elizabeth Payne, aged four months, in appearance weak and somewhat emaciated. The progress of the fection on this child's arm was very much like that of her sister's, just mentioned: but the vesication emed rather more extensive, and the surrounding inflammation less. The sixth day after inoculation her other informed me that the child had been very unwell the preceding night with what were called inward nvulsions, and had vomited two or three times. On examination, the heat of her skin, and the frequency of her pulse, indicated the presence of some degree of fever. Eighth Day.—I learned that the

*In the second volume of the History of Inoculation, now nearly ready for the press, I have endeavored show that the general greater mildness of the inoculated than the casual small-pox depends upon this cumstance.

febrile state had continued, more or less, till this morning; nor was it then wholly gone off. The inoculated part, I judged from its appearance, had not entirely ceased from disordering the constitution. Eleventh Day.—The redness of the tumor is subsiding, and its general appearance resembles the effects of inoculation with variolous matter when the eruption is completed, and the maturation proceeding favorably. The patient's mother now thinks her as well as usual. She was this day inoculated with variolous matter. Thirteenth Day.—She manifests no signs of indisposition. The redness about the tumor is gone off, and the matter is forming a scab. The second inoculation produces no effect. Fifteenth Day.—She is now very well; but her mother says she was seized with inward convulsions yesterday, and was extremely ill afterward for two hours; this, however, cannot be justly ascribed to inoculation, as the part in which the cow-pox matter was inserted is now covered with a dry scab, not attended with inflammation: and the variolous matter produced no redness whatever. She was this day brought to a man laboring under the casual small-pox, and kissed by him, in order more fully to try if she was secure from the infection of the small-pox. Her sister, Mary Payne, was also subjected to the same test, but neither of them have since taken the disease.

THIRD CASE.

Thomas Buckland, a strong child, four months old. The progress of the infection on the boy's arms was even more regular and produced appearances more analogous to those of the inoculated small-pox than in the case of Mary Payne. The vesicle on the inoculated part formed on the third day, and the surrounding inflammation never became phlegmonous, nor was it attended with any hardness of the integuments. Seventh day.—In the evening he was discovered to be feverish and restless, when two pustules exactly resembling those of the small-pox appeared near to the inoculated part. The following day he still continued indisposed, and the cutaneous inflammation had that peculiar irritable or angry aspect which is observed on the accession of the eruptive symptoms in cases of inflammation with variolous matter. Tenth day.—The suppuration was more extended, and the efflorescence immediately encompassing it, had nearly disappeared, leaving its border more strongly marked than the inner; a circumstance of the most favorable import in inoculation. The two pustules upon his arm were more advanced, and several others were visible upon different parts of his body, his ankles and feet were beset with a rash like scarlatina. He is still feverish, and his mother reports that last night he vomited. Eleventh day.—The soreness of his arm, and the fever had ceased. Nine distinct pustules were now discovered upon his body and limbs, somewhat smaller than variolous pustules; from one of these I obtained an ichorous matter, and with it inoculated Sarah Price. Thirteenth day.—The febrile symptoms returned yesterday, nor is he wholly free from them to-day. Nine additional pustules have appeared; no inflammation remains at the inoculated part, and the matter it contains begins to dry. Fifteenth day. He is free from disorder; six pustules have appeared making in the whole twenty-four, some of them maturate at the apex, but they mostly die away without proceeding to suppuration. He was this day exposed to the effluvia of casual small-pox, in the same manner as the two Paynes.

FOURTH CASE.

Richard Payne, a healthy boy, ten years old. The inoculated part was not sensibly elevated nor inflamed, till the fourth day. Seventh day.—The tumor had spread considerably; and the vesication upon it was very evident. He felt a sensation of itching in the part; and the next day complained of a pain in the axilla, which continued two days. Tenth day.—The centre of the tumor became depressed, its edges elevated, and surrounded by a deep-colored inflammatory border. The central part of the tumor was now assuming externally a brown color and in a few days afterwards it formed a dark scab. Though considerable tumefaction, with hardness and redness, remained at the inoculated part several days yet no ulceration ensued. Fifteenth day.—Five pustules remained resembling those in Buckland. This boy was twice inoculated with variolous matter during the progress of the cow-pox infection, and exposed to patients under the small-pox the whole time, without being infected by it; and the only complaint arising from the cow pox was the pain in his arm-pit.

FIFTH CASE.

Matthew Redding, sixteen years old. Third day.—The insertion of the matter did not appear to have produced any inflammation or hardness in the part; he was, therefore, inoculated with variolous matter, at the distance of two inches from the part in which the cow-pox matter was inserted. Next day a little redness could be discovered at the first puncture, and from this time both inoculations proceeded very regularly, but slowly, so that on the seventh day they appeared to be inflamed in an equal degree, the extent of the inflammation not exceeding the tenth of an inch in diameter. Eighth day.*—He has pain in the axilla. Tenth day.—Both tumors are approaching to suppuration. They are of the same form, and attended with an equal degree of efflorescence. Eleventh day.—He complains of headache: the red ring now extends in a circular form, and includes both tumors. Thirteenth day.—There appears more tension and pain at the variolous tumor than at the other, but the latter tumor is more prominent. Fifteenth day. Both tumors began to dry, and no inconvenience followed. This boy made no other complaint, during the process of infection, than of uneasiness in the axilla, followed by a slight headache, of very short duration; however, on the seventeenth day, four small pustules appeared, viz: one upon his nose, one upon his thigh, and two on his head: none of which suppurated. This case strikingly resembles that of Richard Payne, on which the pustules did not appear till the arm scabbed.

SIXTH CASE.

Jane Collingridge, a healthy, active girl, seventeen years of age. Third day.—The inoculated part begins to be elevated and inflamed. Fifth day.—It was vesicated, and attended with itching. She was inoculated with variolous matter in the right arm, the former inoculation having been in the left. Eighth day.—The whole tumor is much increased in all dimensions: its form is perfectly circular, and it appears of a lemon colored tint. She now complains of a stiffness across her arms, and of a pain in the axilla; the puncture in the right arm begins to be elevated and inflamed. Eleventh day.—She complains of headache and pain about the loins; the tumor produced by the cow pox matter is now more inflamed at the margin, which is beset with minute confluent pustules: the variolous tumor is also advanced to a state of vesication: and she reports, that last night both axillas were painful. Twelfth day.—She continues indisposed; the tumor

*Here as well as in the subsequent cases, where the patient was twice inoculated on different days, I date the time from the first inoculation.

rounded by an extensive efflorescence; the variolous tumor is of a deeper red color. Thirteenth day.—e cow-pox tumor is subsiding and forming a scab; that of the small-pox is efflorescent; her headache ntinues; pain in the right axilla; several pustules appear. Fifteenth day.—There are small pustules nd the edges of the variolous tumor; more pustules appear scattered over the face, body, and limbs. enteenth day.—The scab over the cow-pox tumor is in a state of suppuration; she complains of a sore oat; the number of pustules is now from one to two hundred, in no respect differing from variolous pus-s of the mild sort. From this time both the tumors gradually healed, and the pustules dried at the al time.

SEVENTH CASE.

nn Pink, a tall girl, of a brown sallow complexion, aged fifteen years. This girl was inoculated with iolous matter, on the fifth day, in the same manner as Collingridge, and both tumors proceeded to ma-ation, though more slowly than in that case Neither of the tumors began to scab till the seventeenth , when they resembled each other so perfectly that the one could not easily be distinguished from the er. She had no pain in either axilla, nor made any complaint during the whole progress of the infec-, neither did pustules appear upon her.

he only other persons whom I first inoculated with the matter of cow-pox, and on the fifth day after-ds with variolous matter, were William Harris, William Bunker and James Crouch.

EIGHTH CASE.

Villiam Harris, twenty-one years of age, of a tall and slender make, and of a delicate constitution, was ulated January 24 with the matter of cow-pox, taken from the arm of Sarah Rice, who received the dis by milking the cows. Third day.—The inoculated part was evidently elevated and inflamed. Fifth .—It advanced to vesication, and a sensation of itching was perceived in the part; he was this day in-ated with variolous matter. Ninth day.—The tumor of the first inoculation presents prominent callous s with but very little redness; its centre is depressed and contains a lymphatic fluid; he perceives a erness in the axilla; the variolous tumor is considerably inflamed and vesicated, and itches more than other. Next day a pain was perceived in the axilla of the arm, in which the variolous matter was in-ed, as well as in the other. Twelfth day.—Redness of the cow-pox tumor is going off; but that of the olous still spreads with an irregular margin. Fourteenth day.—Several pustules appear. The cow-tumor is now dry at the centre, but its surrounding edges appear of a blueish tinge, and still abound ichorous matter. The variolous tumor is much inflamed, and beset with confluent pustules at its s; its centre is depressed and of a dark hue. Nineteenth day.—The cow-pox tumor has formed into a scab, with a finely polished surface, and of a mahogany brown color; the variolous tumor is in a puru-state, with an extensive inflammation at the margin; the pustules are about 300 in number, very large, all in a state of maturation. From this time all the effects of inoculation went off gradually; he never plained of headache, nor of any febrile symptom during the whole progress of the disease.

NINTH CASE.

illiam Bunker, a strong, healthy boy, fifteen years of age, was inoculated in his left arm, on the same and with matter from the same person as Harris. Third day.—The inoculated part was elevated and ened. Fifth day.—The inflammation was much increased; he was now inoculated in his right arm with olous matter. Eighth day.—The tumor upon his left arm is much elevated, and the vesication consid-le since the sixth day; he now complains of pain in the axilla and of headache. The pustule on the arm advances very slowly. Tenth day.—The pain in the axilla and the headache continue. The tu-of the left arm begins to scab in the centre, and is surrounded with a red tinge of considerable extent. tumor on the right arm now also presents a red tinge of a familiar appearance, but not of half the ex-The tumor on the right arm now also presents a red tinge of a similar appearance, but not of half xtent; its center is in a state of vesication, and its edges studded with small pustules; his headache is ntirely gone off. Twelfth day.—The red tinge surrounding the tumor on the left arm has disappeared, pt a narrow ring at its outer border the tumor on the right arm is depressed at the centre, where it is of a livid color; its edges are hard and inflamed; he now discovers two or three pustules upon his Seventeenth day.—The matter of both tumors is almost wholly formed into a dry incrustation; no pustules have appeared; one upon his hip has maturated. Twentieth day —Both tumors are perfectly ped; that upon his left arm appears browner and smoother than the other.

TENTH CASE.

nes Crouch, seven years old, inoculated on the same day as the last patient with matter taken from the girl, and with variolous matter five days afterward. Fifth day.—The inoculated part was considera-levated and inflamed. Ninth day.—The cow-pox tumor is much advanced; the pellicle filled with ; the marginal inflammation not considerable; the variolous puncture now displays a small red speck, n begins to spread. Eleventh day.—The cow-pox tumor exhibits an extensive efflorescence, or red upon the surrounding skin, and its centre begins to dry; the variolous tumor is spreading a little, and tate of vesication. Fourteenth day.—Pain in the axilla is now produced by the cow-pox tumor, which ing at the centre; the variolous tumor is now efflorescent, but not to half the extent of the other. this time the tumors quickly healed, no eruption took place, and no farther inconvenience was experi-.

ELEVENTH AND TWELFTH CASES.

mas Fox, aged twenty-five, and John Dennis, twenty-three years of age, both strong men, and accus to hard labor, were inoculated on the 22d of January with variolous matter, and on the following day ow pox matter, taken from the arm of Sarah Rice. In both these cases, the first inoculation was per-d by two punctures at the distance of two inches from each other, and the latter by one puncture at me distance from the two former. The local effects and appearances of the inoculation were very r in both these men: the cow-pox tumors seemed to advance equally with those of the variolous, and strong resemblance to them: the former, however, were more elevated and circumscribed; for about nth day the variolous tumors became angulated or ragged at the margin, which was not so conspicu-the others, though both had small confluent pustules at their margins. Those of the cow-pox also healed, and formed a smoother scab. The eruptive fever came on about the eighth day with Dennis, t till the tenth with Fox; the former had more than 300 pustules; and the latter about 100; all of were in every respect similar to variolous pustules.

THIRTEENTH AND FOURTEENTH CASES.

John Talley, fourteen, and Thomas Brown, fifteen years old, were, January 25th, inoculated with variolous matter in the left arm, and the following day they were both inoculated in the right arm with the matter of cow-pox, taken from the arms of Mary and Elizabeth Payne, (see cases first and second). The progress of both the infections on the arms of these boys was perfectly regular and equal throughout. On the seventh day all the tumors were considerably inflamed and in a state of vesication, attended with itching. Brown also at this time complained of a pain in each axilla; but with Talley the pain was confined to the left till the next day, when both arm-pits were affected. Tenth day.—They both complained of headache and of pains about the loins; these, however, were very slight, and no further indisposition ensued. On the evening of the twelfth day some pustules appeared upon Brown, but upon Talley they did not appear till the fourteenth day; the former had in all about thirty, and the latter only six, all of which were apparently variolous. The cow-pox tumors were more elevated at the edges and less depressed at the centre after the ninth day than those of the variolous; and they eventually formed a smoother and browner scab, as in the case of Fox and Dennis.

January 30th.—William Mundy, Elizabeth George and Sarah Butcher were inoculated by two punctures with the matter of cow-pox, taken from the arm of Collingridge, (Case 6th.)

FIFTEENTH CASE.

William Mundy, a strong laboring man, aged twenty-five years, was inoculated as above described by two punctures in his left arm. The local infection of both punctures advanced, and the inflammation and its effects proceeded rapidly, so that on the eighth day he complained of uneasiness in his axilla, and of pain in the head and loins, which continued about two days; the tumors were considerably elevated, and their margins much inflamed. Thirteenth day.—They were surrounded with an extensive redness, in the form of an halo, and beginning to scab at the centre; the edges continued circular, well defined, and elevated. Fourteenth day. Several pustules appeared upon his neck and back but disappeared in two or three days without suppurating. He was this day inoculated with variolous matter, but it produced no other effect than a little redness of two or three days duration.

SIXTEENTH CASE.

Elizabeth George, a strong woman, twenty-five years old, was inoculated in the same manner, and on the same day above mentioned, with cow-pox matter taken from the same person. The punctures quickly rose, but the inflammation was inconsiderable till the sixth day, when vesication and itching commenced. Ninth day.—Has no pain in the axilla, but complains of headache and pain in the loins. Eleventh day.—Her pains continue; pulse quick; the central pellicle of the tumors is extending, and replete with a watery humor; the margins swollen and red. Thirteenth day.—They were surrounded with an extensive redness, in the form of an halo, and beginning to scab at the centre; the edges continued circular, well defined, and elevated. Fourteenth day. Several pustules appeared upon his neck and back but disappeared in two or three days without suppurating. He was this day inoculated with variolous matter, but it produced no other effect than a little redness of two or three days duration.

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SEVENTEENTH CASE.

Sarah Butcher, a healthy girl, thirteen years old, was inoculated with the matter of cow-pox at the same time and in the same manner as above mentioned. Sixth day.—The tumors were much elevated, the inflammation inconsiderable; the vesication fully formed, and attended with itching. Ninth day.—There was a slight efflorescence around the tumors, uneasiness in the axilla, headache, pain in the loins. Eleventh day.—Suppuration at the inner edges of the tumor, redness at the outer edge very extensive. Fourteenth day.—Tumors scabbing; no eruption; complains of pain in her bowels and diarrhœa. Sixteenth day.—No complaint, central part of tumor scabbed; inflammation still surrounding the edges. She was inoculated this day with variolous matter. Eighteenth day.—The redness gone off, leaving a red tinge at its outer margin. The variolous matter produced a little redness, which disappeared in two days.

January 31st.—Thomas Wife, aged fourteen, and Sarah Price, aged thirteen years, were inoculated with the matter of cow-pox, taken from Mathew Redding, and at the same time with variolous matter, but the latter inoculations were the following day prevented by applying the concentrated acid of vitrol to the punctures.

EIGHTEENTH CASE.

Thomas Wife, above mentioned. Fifth day.—The inoculated part was considerably inflamed and vesicated. Eighth day.—The tumor advances with much marginal redness, and a pain in the axilla is perceived. Twelfth day.—Pain in the axilla continued two days. He has no other complaint. The centre of the tumor is forming a scab, but is surrounded with an appearance like areola papillæ. Two pustules were discovered upon his body this day, and two more appeared on the fifteenth day, but none of them became purulent. The tumor upon his arm had at the time formed a hard, smooth scab.

NINETEENTH CASE.

Sarah Price, inoculated, as above stated, in her left arm; on the same day was inserted in her right arm cow-pox matter, taken from a pustule from Buckland. Fifth day.—There was a redness of elevation at the two punctures of each arm, but in consequence of the caustic effects of the vitriolic acid none at the variolous puncture. Eighth day.—Both tumors were advanced; vesication and a considerable degree of inflammation, especially in that on the left arm. She now complains of *rigor* and of pain in the left axil. These symptoms, together with a headache, continues two days. Three pustules have appeared upon the face and neck, and two days afterwards three others, none of which suppurated. This girl, as well as Thomas Wife, was constantly exposed to the small-pox during the progress of their inoculation.

TWENTIETH CASE.

omas Dorset, inoculated February 1st, with the matter of cow-pox, taken from the arm of Jane Col-idge (see case six). Seventh day.—The inoculated part was much elevated and in a state of vesication. ded with the usual degree of redness. Eleventh day.—Last night he perceived an uneasiness in his n, and he now complains of pain about his loins; the tumor encircled by an extensive efflorescence. teenth day.—The tumor scabbing at the centre. He was inoculated this day with variolous matter. variolous inoculation, produced no effect. About the twelfth day this man had four or five pustular arances which he called pock, but they seemed to me more like common pimples than variolous pus-s.

TWENTY-FIRST CASE.

hn Keys, twenty-five years old, inoculated February 6, with matter of cow-pox taken from the arm of es Crouch. On the fourth day the inoculated part was considerably inflamed, and affected with a sen-n of itching; but from this time the redness gradually disappeared, and was entirely gone on the h day, when he was inoculated with variolous matter in both arms, but without effect. On the tenth however, he complained of pain in his head and loins, with which he was affected three days, but ruption ensued.

TWENTY-SECOND CASE.

lward Turner, a strong man, twenty-four years of age, inoculated by two punctures with the matter w pox taken from the arm of James Crouch (Case Tenth) February 5th. Seventh day.—The tumors much advanced, in a state of open vesication, and attended with itching. Twelfth day.—They be-to dry in the centre, but the margins were of a dry red color, and studded with minute vesiculæ; ow complains of pain in the axilla, stiffness of his neck and pain in the loins. Fourteenth day.—ache and pains in the loins continue; the inner edges of the tumors are distended with an ichorous . Sixteenth day.—Complaints of headache and sore throat; next day about 100 pustules appeared, of which were very small. Nineteenth day.—He has no complaint; the number of the pustules amounts to about 220; all of them afterwards suppurated. On the twenty-third day he was inoculated the variolous matter, which produced no effect.

TWENTY-THIRD CASE.

nnah Morgan, a strong child, one year old, was inoculated with the matter of cow-pox taken from m of James Crouch, February 5. Fifth day.—The inoculated part is much elevated and inflamed. th day.—The tumor contains ichor, and the redness and elevation are greatly increased; yesterday ecame feverish, and last night was sick and vomited; her skin at this time is hotter than usual. teenth day.—The febrile symptoms continued, and at times were very severe, till the tumor is now ing. She was afterwards inoculated with variolous matter, but it only produced a transient redness part.

TWENTY-FOURTH CASE.

e West, twenty-one years of age, was inoculated on February 6th with the matter of cow-pox, taken the arm of Sarah Butcher. Seventh day.—The inoculated part was considerably elevated and in-d; the vesication was also extensive and attended with itching. Ninth day.—She complained of head-and next day of a pain in the axilla and upon her shoulder, attended with rigors and shivering; the r of the tumors appeared of a deep red, and its inner edges contained an ichorous matter. Thirteenth -Yesterday an efflorescense appeared around the tumor. She complains of a sore throat, and says she pain across her chest. Fifteenth day.—Two pustules have appeared upon her side; the tumor be-o dry. She makes no complaint. Seventeenth day.—Twenty pustules appeared, all of which sup-ed. Twenty-third day.—The variolous inoculation produced no inflammation.

TWENTY-FIFTH CASE.

Bumpus, aged twenty years, was inoculated February 6 with the matter of cow-pox, taken from the Sarah Butcher. The appearances of the inoculated part in this girl's arm corresponded in every t with those stated in West's case. Eighth day.—She complained of headache. Tenth day.—Pain head and loins; shivering. Eleventh day.—Two or three pustules appear upon her face. Thirteenth Pains continue; more pustules appear. Fifteenth day.—No complaint; the pustules were counted und to be 310, resembling those of the small-pox. Seventeenth day.—Complains of sore throat. enth day.—Pustules drying. Twenty-second day.—Inoculated with the matter of small-pox, but no mation was produced by it.

TWENTY-SIXTH CASE.

nas Slade, twenty years of age, was inoculated with the matter of cow-pox taken from the arm of n Mundy, February 6. On the eighth day the inoculated part was much elevated and in an advanced f vesication. He complained of headache and pain in the axilla; and on the next day of a pain in ns. Eleventh day.—Pains abated; three or four pustules appear; the tumor is bordered with small nt vesicles. Fourteenth day.—No complaints; tumor beginning to scab. Nineteenth day.—The of the tumor formed a brown, hard scab. The pustules do not suppurate and are receding. Twenty-day.—He was inoculated with the matter of small-pox, which produced a redness for two or three nd afterwards gradually disappeared.

TWENTY-SEVENTH CASE.

ces Jewel, a healthy young woman, twenty years of age, who had undergone the small-pox by inoc-when a child, was inoculated with the matter of cow-pox taken from the arm of Sarah Butcher, ry 5. The inoculated part advanced with a tumor equal in extent and duration to that in the case ntioned; on the ninth day headache and pains of the loins came on, and continued two or three days. mor began to scab on the thirteenth day, but no pustules appeared. She was afterwards inoculated ariolous matter, and also with that of the cow-pox, neither of which produced any inflammation.

TWENTY-EIGHTH CASE.

Charlotte Fisk, four months old, was, on February the 13th, inoculated with the matter of cow-pox, taken from the arm of Frances Jewel. In this child the local disease proceeded very regularly. She had became indisposed on the eighth day, and continued feverish for three or four days, when about forty pustules appeared; but the greatest part of these pustules did not proceed to suppuration. The mother of the child labored under the natural small-pox, and was covered with pustules in a purulent state at the time her child was inoculated; yet the infant was suckled by her during the whole course of the disease, and was frequently seen besmeared with variolous pus. Whence it would appear that the vaccine infection not only prevents but actually supersedes the casual small-pox.

TWENTY-NINTH CASE.

James Tarrent, nineteen years old, was, on the 16th day of February, inoculated with the matter of cow-pox, taken from a pustule upon Elizabeth George. In this case the inflammation at the inoculated part proceeded very rapidly, and was more extensive than usual on the sixth day; but from this time it began to recede, and was entirely gone on the tenth day, only a small dry scab at the puncture being left. He was now inoculated with variolous matter, which did not produce any inflammation whatever. I consider this man one of the few whose constitutions cannot be effected either by the virus of the cow-pox or the small-pox. It is true he complained of headache about the ninth day, but I should not be disposed to attribute this symptom to the inoculation.

THIRTIETH CASE.

William Hull, aged eleven years, was, on the 8th day of February, inoculated with the matter of cow pox taken from the arm of Sarah Butcher. Seventh day.—The tumor at the inoculated part is advanced in the usual manner, and he this day complains of headache. Tenth day.—His headache and pains in the loins continue, and several pustules now appear upon him. Twelfth day.—The pains are gone off and more pustules appeared. Fifteenth day.—The pustules amount to about 200. They vary much in size, and are proceeding to maturation. Eighteenth day. He was inoculated with variolous matter, which produced no effect.

THIRTY-FIRST AND THIRTY-SECOND CASES.

February 8th, Hannah Hull, aged thirteen years, and Sarah Hull, eight years old, were inoculated with the matter of cow-pox taken from Sarah Butcher. These two sisters had the disease rather more favorably than their brother William Hull, for the inoculated part was in both surrounded by an efflorescence on the eleventh day, and the number of pustules upon the third was not equal to that of their brother's, nor were the eruptive symptoms of half the duration of his. On the twentieth day they were inoculated for the small-pox, but no disease ensued.

THIRTY-THIRD CASE.

George Reed, aged fifteen years, was inoculated with the matter of cow-pox taken from the arm of T. Jessel, February 14th. The inoculated part tumified in the usual manner; he complained of headache on the eighth day, and this symptom continued with occasional intermissions till the 13th day. Some pustules began to appear about the 11th, and the eruption was completed on the fourteenth day. They were in number about seventy some of which were very small, but they all matured in a favorable manner. He was afterwards inoculated with variolous matter, which formed a pustular appearance; but no disorder was produced. Frances Pedder, Amelia Hoole, George Hickland and Elizabeth Morton, were inoculated on February 13th and 14th with cox-pox matter taken from the arm of Sarah Price, who was inoculated from a pustule on Buckland (see case three).

THIRTY-FOURTH CASE.

Frances Pedder, a child, eleven months old. The inoculated part was gradually elevated and inflamed. Eigth day.—The eruptive symptons supervened and she continued feverish till the thirteenth day, when several pustules appeared. The tumor began to scab and the number of pustules then upon her was forty, all of which inoculated without becoming purulent. She was afterwards inoculated for the small-pox without effect.

THIRTY-FIFTH CASE.

Amelia Hoole, five months old, was inoculated as above described. The local tumor advanced in the usual manner. Seventh day. She became feverish, and several small pustules appeared at the border of the tumor. Tenth day.—She continued slightly indisposed since the last report, and nine pustules are now visible upon her body and extremities. Fourteenth day.—The pustules amount to 102 in number, and form yellowish scabs. Eighteenth day.—The inoculated part was perfectly healed; the pustules appeared in a state of desquamation. She was at this time inoculated with variolous matter, but without effect.

THIRTY-SIXTH CASE.

George Hickland, six months old, inoculated from the person above mentioned. The eruption symptom in this child were less severe, and of shorter duration than in the last case. However the number of pustules which appeared amount to 300, but only about one-third of them suppurated. This patient also resisted the infection of the small-pox by inoculation.

THIRTY-SEVENTH CASE.

Elizabeth Morton, nine months old, was more severely disordered than any of the four children inoculated with the matter taken from Sarah Price. The fever continued with some degree of violence from the seventh to the fifteenth day, and the number of pustules amounted to 200. On the twentieth day she was inoculated with variolous matter without effect.

THIRTY-EIGHTH CASE.

L. Davy, aged eleven weeks, was on February 19th inoculated with the matter of cow-pox taken from e arm of Charlotte Fisk. This child had the disease very favorably. On the tenth day the tumor was rounded by efflorescence, and her skin was a little hotter than usual during that day only. On the thir- nth day one pustule appeared near to the inoculated part, and two upon her forehead, which were all she d. She was afterwards inoculated for the small-pox without effect.

THIRTY-NINTH CASE.

Maria Murrell, aged four months, was inoculated with matter taken from the same person and on the same as Davy. Fifth day.—The inoculated part was much elevated and inflamed. On the evening of the nth day she vomited. Tenth day.—The tumor was surrounded by a very extensive efflorescence, and she ame hot and restless. Twelfth day.—She seemed free from fever, and about twenty pustules appeared n her. Fourteenth day.—The inflammation upon the arm was gone off, and the pustules seemed to be bbing. The subsequent inoculation of the small-pox as upon the others, produced no effect upon this ent.

cow kept by Professor Coleman, at the Veterinary College, was inoculated on its teat with the matter ow-pox taken from the arm of James Crouch, which produced the disease in the cow (see case ten). A servant, by milking this cow, was also affected with an extensive tumor upon his thumb; this soon ac- ed a livid blue color, and was attended with a considerable degree of fever for several days, and with a upon his ankles and feet.

ith the matter produced in the nipple of this cow were inoculated Martha Streeton, James Smith and rge Meacock.

FORTIETH CASE.

artha Streeton, aged twenty-two years, was on the 18th of February, inoculated with the matter above tioned. The inoculated part tumified in the usual manner, and on the ninth day she complained of ache, and afterwards of a pain in the axilla. The headache and pain in the loins continded, but not severity, for five or six days. Pustules began to appear on the twelfth, and the eruption was com- d on the sixteenth day, when the number was about 300. During the maturation of the pustules, which respect differed from those of the small-pox, she complained of her throat being sore. On the nine- th day this patient was perfectly well. She was afterwards inoculated for the small-pox without effect.

FORTY-FIRST AND FORTY-SECOND CASES.

nes Smith, sixteen, and George Meacock, thirty years of age, were, on the 19th of February, inocu- with the same matter as that mentioned in the preceding case. The latter of these patients had the se nearly in the same manner as Streeton: but in a greater degree, for Meacock's pustules were more rous and the inoculated part did not exhibit a tumor so well defined and elevated as Streeton's did. 's case differed widely from both; his arm tumified rapidly, and an erythema or blush extended the punctnre several inches up his arm, and down to the elbow. The eruptive symptoms began on eventh, and continued till the eleventh day. He had four or five pustules upon his face, and nearly a red upon his body and limbs, all of which matured favorably and the erysipelatous appearance of the lated part soon went off, though no application was employed for that purpose. Both the above nts were inoculated with variolous matter, which produced no effect upon Meacock, but in Smith it was ed by a cutaneous inflammation of several days continuance.

uel Fairbrother, fifteen years old, Richard Calloway, aged nineteen years, James Camplin, aged sev- n years, John Turner, eight months old, and Mary Welsh, three months old, were all, on the 21st and February, inoculated with the matter of cow-pox taken from the arm of Edward Turner (see case y-two).

FORTY-THIRD CASE.

uel Fairbrother began to be indisposed on the ninth day, and had repeatedly slight feverish paroxysms ain in the axilla till the fourteenth day, when four small pustules appeared, after which no further aint ensued.

FORTY-FOURTH CASE.

Richard Calloway the inoculated part tumified in the usual manner, and on the ninth day he first com- d of a pain in the axilla and headache, which continued till the twelfth day, an extensive bright red then surrounded the tumor, and no farther complaint ensued. At this time also some pustules ap- , but their number never exceeded twenty. He had been inoculated in the hand as well as in the order to discover if the appearance of the tumor in a part constantly exposed to the air would be the s in the arm covered by his dress. The difference was very evident, for the tumor upon his hand uch more extensive, of a more livid color, and attended with more inflammation than the other.

FORTY-FIFTH CASE.

es Camplin suffered rather more from the eruptive complaints than Calloway, and they continued im a day longer. However, the disease gave him very little uneasiness, and he had only thirty pus-

FORTY-SIXTH CASE.

Turner's arm was inflamed very extensively, and he became feverish on the eighth day. The fol- day many pustules appeared, and on the eleventh day he was almost covered with pustules, having 00. These, however, were perfectly distinct, and they all maturated favorably, so that about the enth day he was completely well.

FORTY-SEVENTH AND FORTY-EIGHTH CASES.

Joanna Buckley and Mary Welch had the disease in its mildest form. On the eighth day an efflorescence surrounded the inoculated part in both these children, and during this day only appeared a little indisposed. No pustules upon either of them

All the six patients thus infected with vaccine disease from E. Turner, were subsequently inoculated with variolous matter, which did not produce any disorder.

February 18th, William Walker, eleven months old; February 24th, Sarah Dixon, nineteen years old; Thomas Ellistone, aged fifteen months; Maria Dunn, aged twenty months; and James Cummins, aged fourteen weeks, were all inoculated with the matter of cow-pox taken from the arm of Hannah Bumpus.

FORTY-NINTH CASE.

*William Walker's arm tumified in the usual manner, but he did not manifest the least indisposition during the course of the infection; neither did any pustules appear, except one or two at the inoculated part.

FIFTIETH CASE.

Sarah Dixon's arm tumified in the usual manner, and on the tenth day she began to complain of a pain in her head and loins; this was followed by shiverings and a pain in the axilla and across her shoulders. Thirteenth day.—The pains were much abated, and some pustules appeared. Sixteenth day.—She makes no complaint, but of a soreness of her throat; the eruption is now completed, and the number of the pustules is found to be 174; all of these afterwards maturated.

FIFTY-FIRST CASE.

Thomas Ellistone was feverish from the sixth to the eighth day, when the tumor was surrounded with an extensive efflorescence. After this time he had no ailment. No pustules appeared.

FIFTY-SECOND CASE.

Maria Dunn was hot and restless from the sixth till the ninth day. She had no eruption.

FIFTY-THIRD CASE.

James Cummins did not seem the least disordered from the inoculation, although the inoculated part tumified very considerably, and several pustules appeared at the margin of the tumor on the eleventh day.

All the above-mentioned persons, inoculated with the matter of the cow-pox, taken from the arm of Bumpus, have been since inoculated with variolous matter, but without effect.

John Giles, twenty years of age; Wm. Bigg, eighteen years old; Wm. Briaris, fifteen years old; Sophia Dobinson, five years old; Sarah Dobinson, three years old; and Hannah Dobinson, one year old; were inoculated with the matter of cow-pox, taken from the arm of Jane West, February 21.

FIFTY-FOURTH CASE.

John Giles complained of headache from the ninth to the eleventh day. A slight soreness of the throat came on, and continued several days. He had about thirty pustules.

FIFTY-FIFTH CASE.

William Bigg also complained of headache and sore throat several days, and had about twelve pustules.

FIFTY-SIXTH CASE.

Wm. Briaris first complained of indisposition on the seventh, and continued somewhat disordered till the eleventh day. Only two pustules appeared.

FIFTY-SEVENTH CASE.

Sophia Dobinson's arm tumified extensively, but she made no complaint during the whole progress of the infection, and had no eruptions.

FIFTY-EIGHTH CASE.

Sarah Dobinson's case was in every respect similar to that of her sister Sophia.

FIFTY-NINTH CASE.

Hannah Dobinson suffered as little from the disease as either of her sisters till the fourteenth day, when according to her mother's report, she was seized with convulsions for two or three hours. She had no eruption.

The above six patients have since been inoculated for the small-pox without effect.

Mary Greeville, twenty years old; Edward Honeywood, two years old; Thomas Rood, one and a half years old, Charlotte, Mile fifteen months old; Henry Barber, eleven months old; John Jenkins, one month old; Thomas Dix, eleven months old; Ann Walker, ten months old; Samuel Francis Trough, eight months old; A'exander Towser, eight months old; Wm. Knighton, eight months old; Sarah Price, eight months old; Elizabeth Spilsbury, four months old; Elizabeth May, four months old; Mary Ann Stone, three months old; Francis Terry, two months old; Wm. Scott, two months old; Wm. Johnson, two months old, were inoculated with the matter of cow-pox, taken from the arm of Martha Streeton, on February 2

* The father of this child is an ingenious engraver in Rosamond street, Clerkenwell, who having lo child under the effects of inoculated small-pox, was induced to inoculate his only son for the cow- The particulars of the case are related by Mr. Walker himself, in the Medical and Physical Journa March, 1799.

SIXTIETH CASE.

Mary Greenville, on the ninth day, began to complain of headache, which continued till the twelfth day hen a sore throat came on, and gave her a little uneasiness for about two days. She had thirty-five pus- les.

SIXTY-FIRST CASE.

Edward Honeywood was not perceptibly disordered from the inoculation, although his arm was much mified; and on the eleventh day it exhibited an efflorescence. No eruption appeared.

SIXTY-SECOND CASE.

Thomas Rood was feverish from the seventh till the tenth day, and at the commencement of the fever he d two or three short convulsive paroxysms; but no eruption took place.

SIXTY-THIRD CASE.

Charlotte Mile. A little redness was observed at the inoculated part on this child's arm for two or ee days; but this had wholly disappeared on the seventh day, when she was inoculated with variolous tter, which produced the disease in a favorable manner.

SIXTY-FOURTH CASE.

ohn Jenkins became indisposed on the twelfth day, and was very restless for three days. He had ut 300 pustules.

SIXTY-SIXTH CASE.

enry Barber had a slight fever on the eighth day, when symptoms of dentition supervened, but the r was of short duration. He had but one pustule and that was upon his upper lip.

SIXTY-FIFTH CASE.

homas Dix's arm exhibited an extensive efflorescence on the elveenth day, and some evanescent pustules eared; but he never manifested any indisposition during the progress of the infection.

SIXTY-SEVENTH CASE.

an Walker became indisposed on the ninth day, and continued fretful about twenty-four or thirty s; the fever then ceased, and she has since been wholly free from disorder. No eruption appeared

SIXTY-EIGHTH CASE.

muel Francis Brough was taken ill on the ninth with spasmodic paroxysms, succeeded by fever; the er were of short duration, but the latter, with occasional intermissions, continued for three days. enth day.—Some pustules appeared; their number, however, when the eruption was completed, did not ed twenty.

SIXTY-NINTH CASE.

exander Towser was restless and feverish about two days. Ten pustules appeared.

SEVENTIETH CASE.

lliam Knighton had no eruption. He was a little indisposed between the seventh and tenth days.

SEVENTY-FIRST CASE.

ah Price had some indisposition on the ninth day, which terminated in a diarrhœa. On the thirteenth he was perfectly well; two pustules were now discovered upon her right foot, which were all she had.

SEVENTY-SECOND CASE.

abeth Spisbury was somewhat indisposed on the tenth, and on the fifteenth day; but the latter indis- n was the effect of teething. She had no eruption.

SEVENTY-THIRD CASE.

abeth May was a little feverish on the eighth day, and continued somewhat restless till the thirteenth ve pustules appeared.

SEVENTY-FOURTH CASE.

y Ann Sully was feverish on the ninth day, and passed a restless night, but on the next morning she tter; she made no further complaint, and no pustules appeared.

SEVENTY-FIFTH CASE.

cis Terry, became feverish on the ninth day; the next morning a rash appeared, when he seemed to ell as usual. He had only one pustule.

SEVENTY-SIXTH CASE.

am Scott was a little feverish on the eighth day only; no eruption ensued.

SEVENTY-SEVENTH CASE.

William Johnson's arm tumified in the usual manner. He had no pustules, nor did he appear feverish during the course of the disease; but on the evening of the thirteenth day, he was thought to be a little restless.

SEVENTY-EIGHTH CASE.

Mary Stewart, like Johnson, was not perceptibly indisposed during the whole progress of the infection neither had she any pustules.

The above patients inoculated with the matter taken from Streeton, were subsequently inoculated for the small-pox, without affecting any but Charlotte Mile, in whom the inoculation for cow-pox took no effect.

February 27th, Joseph Wrench, 24 years old; Stephen Peters, 19 years old; Peter Peters, 18 years old; Elizabeth Brown, 5 years old; Mary Shipley, 3 years old; Margaret Crosby, 10 months old, and John Evans, 7 months old, were inoculated with the matter of cow-pox, taken from the arm of James Smith.

SEVENTY-NINTH CASE.

Joseph Wrench continued indisposed from the tenth till the thirteenth day. An efflorescence appeared at the inoculated part on the eleventh day. Fifteenth day.—Several pustules appeared, and he now complained of a sore throat, which continued three days. The number of pustules was thirty.

EIGHTIETH CASE.

Stephen Peters began to complain on the eighth day, and continued to be affected with the usual febrile symptoms till the thirteenth day. He had only one pustule.

EIGHTY-FIRST CASE.

Peter Peters' complaints were similar to those in the preceding case. The efflorescence did not appear till the eleventh day. He had twenty-four pustules, all of which were very small.

EIGHTY-SECOND CASE.

Elizabeth Brown's tumor on the eighth day was surrounded by an efflorescence. She made no complaint, nor had she any eruption.

EIGHTY-THIRD CASE.

Mary Shipley's arm exhibited an efflorescence on the eighth day; but was not perceptibly indisposed, and had only one pustule.

EIGHTY-FOURTH CASE.

Margaret Crosby had no eruption, nor was she perceptibly ill during the progress of her inoculation. Her arm, however, tumified in the usual manner, and displayed an efflorescence.

EIGHTY-FIFTH CASE.

On John Evan's arm there was an efflorescence on the sixth day, and the following day a slight fever commenced with a spasmodic paroxysm, but he was perfectly well on the ninth, and no eruption took place.

The above five persons have been since inoculated with variolous matter without effect.

Sarah Hat, twenty years old; and Elizabeth Platford, seventeen years old, were inoculated with matter of the cow-pox taken from the arm of Maria Murrell.

EIGHTY-SIXTH CASE.

Sarah Hat began to complain on the sixth day, and she continued much indisposed till the eleventh day, when the tumor was surrounded by an efflorescence, and she made no further complaint. The number of the pustules which appeared was about forty.

EIGHTY-SEVENTH CASE.

Elizabeth Platford was taken ill on the ninth day, when she complained of pain in the head and loins with chilliness, etc.; the inoculated part at this time was considerably inflamed; the tumor was circular but flat, and not surrounded by any efflorescence. Eleventh day.—The pains and shiverings continue; pulse very frequent and weak; tongue white. Thirteenth day.—The symptoms still continue; she also complains of pain across the shoulders; some pustules appear. Fifteenth day.—She complains of pain in the loins and of giddiness; the number of the pustules is much increased. Seventeenth day.—The pain continue; she is very weak and faint; her eyes and throat are inflamed and painful; the edges of the tumor are beset with confluent pustules; the pustules upon her face are about 200 or 300, and approach to confluency. Nineteenth day.—Her face is considerably swelled, and the pustules are now maturating rapidly she makes no complaint, but of the soreness occasioned by the eruption. Twenty-first day.—Swelling of the face much subsided; the pustules in a state of desication. Twenty-third day.—She continues recovering. Twenty-sixth day.—She complains of a sore throat, and a cough is troublesome to her. Twenty-eighth day.—The sore throat is almost gone, but the cough continues; pulse 100. Thirtieth day.—The cough is still violent. Thirty-second day.—The cough is abated, and her appetite improves; from this time she gradually recovered.

Both the above patients were afterwards inoculated with variolous matter, which produced no effect.

Isaac Cowling, twenty-three years old; Mary Webb, twelve years old; Sophia Mason, two years and a half old; and Elizabeth Goodluck, three months old, were, on the 2d of March, inoculated for the cow-pox with matter from the arm of G. Reed.

EIGHTY-EIGHTH CASE.

Isaac Cowling sickened on the ninth, and the eruptive complaints did not wholly go off till the fourteenth day. He had about fifty pustules.

EIGHTY-NINTH CASE.

Mary Webb began to complain on the seventh day, and continued feverish for a week. On the tenth day redness was diffused over the greatest part of her arm, between the elbow and shoulder, and did not wholly disappear till the fourteenth day. She had about twelve pustules.

NINETIETH CASE.

Sophia Mason's arm tumified in the usual way, and exhibited an efflorescence on the tenth day. She had four or five small evanescent pustules, but did not seem indisposed during the course of the infection.

NINETY-FIRST CASE.

Elizabeth Goodluck was taken ill on the eighth day, when she had a slight spasmodic fit; the tumor at this time exhibited an efflorescence. Eleventh day.—Has had no indisposition since yesterday. No eruption took place.

None of the above three patients took the small-pox in consequence of inoculation with variolous matter.

NINETY-SECOND AND NINETY-THIRD CASES.

March 3.—C. S. Cooke, four years old; and A. T. Cooke, two years old: were inoculated with the matter of cow-pox, taken from the arm of George Meacock.

An efflorescence at the inoculated part took place in both these children on the tenth day, but neither of them seemed indisposed from the inoculation, nor did any pustules appear upon them. They were also put to the test of inoculation with variolous matter, but no disease ensued.

March 3.—A. K. Gunter, one year old; Matthew Sears, nine months old: and Eliz. Giles, nine months old, were inoculated with the matter of cow-pox, taken from the arm of H. Dobinson.

NINETY-FOURTH CASE.

A. K. Gunter was a little feverish for two days. On the tenth day the tumor was surrounded by an efflorescence, which became very extensive. Only two or three imperfect pustules appeared.

NINETY-FIFTH CASE.

Matthew Sears was indisposed for about four or five days. The tumor was small and angular, nor was it ever surrounded with an efflorescence. He had about 200 pustules.

NINETY-SIXTH CASE.

Elizabeth Giles became indisposed on the tenth day. The tumor had a dark red colored border without any efflorescence. She had from 70 to 100 pustules.

The above patients have been inoculated with variolous matter without effect.

Richard Scott, two years and a half old; Sarah Bennett, one year old; Maria Black, one year old; Mary Jenkins, nine months old; John Lawyer, eight months old; Eliz. King, six months old; William Jones, six months old; Esther Phipps, six months old; and Ann Harper, five months old, were inoculated with the matter of cow-pox, taken from the arm of Elizabeth Brown.

NINETY-SEVENTH CASE.

Richard Scott became feverish for a short time on the tenth day. He had about fourteen pustules.

NINETY-EIGHTH CASE.

Elizabeth King's tumor, on the ninth day, was surrounded with an efflorescence. She did not manifest any indisposition, nor had any eruption.

NINETY-NINTH, ONE HUNDREDTH AND ONE HUNDRED AND FIRST CASES.

The cases of John Lawyer, William Jones and Sarah Bennett were similar to that of King.

ONE HUNDRED AND SECOND CASE.

Esther Phipps was a little restless and feverish from the tenth till the thirteenth day, but had no eruption.

ONE HUNDRED AND THIRD CASE.

Maria Black became feverish on the ninth day, and was indisposed for two or three days, during which she had two slight convulsions. Some pustules appeared, but did not suppurate.

ONE HUNDRED AND FOURTH CASE.

Mary Jenkins was a little indisposed on the tenth day. She had no eruption.

ONE HUNDRED AND FIFTH CASE.

Ann Harper was a little restless during the seventh and eighth night, but no eruption took place.

ONE HUNDRED AND SIXTH CASE.

Thomas Newman was feverish from the seventh till the twelfth day; but no pustules appeared

March 4th, George Paul, 3 years old; Ann Paul, 1 year old; Martha Chandler, 5 months old; Martha Hat, 1 year old; Eliz. Boardore, 7 months old; Samuel Lampart, 2 years old; Ann Page, one year and a half old; Carter, 5 weeks old; William New, 18 months old; Susan Sermon, 6 months old; Alice Marshall, 2 years old: Harriat Marshall, 4 months old, and Frances Henley, 5 years old, were inoculated with the matter of cow-pox, taken from the arm of Elizabeth May.

ONE HUNDRED AND SEVENTH CASE.

George Paul was not perceptibly indisposed from the inoculation. He had two pustules.

ONE HUNDRED AND EIGHTH CASE.

Ann Paul was feverish for about three days, and had forty pustules, all of which were much smaller than those of the small-pox.

ONE HUNDRED AND NINTH CASE.

Martha Chandler's inoculation produced a very extensive efflorescence; but neither fever nor eruption ensued.

ONE HUNDRED AND TENTH CASE.

Martha Hat did not become indisposed till the thirteenth day, when a few small pustules appeared.

ONE HUNDRED AND ELEVENTH CASE.

Elizabeth Boardore's arm tumified considerably; but neither efflorescence, fever, nor eruption, took place.

ONE HUNDRED AND TWELFTH CASE.

Samuel Lampart was somewhat disordered from the ninth till the twelfth day, and had three small imperfect pustules.

ONE HUNDRED AND THIRTEETH CASE.

Ann Page was not sensibly indisposed from the inoculation, neither had she any eruption. The tumor was surrounded with an efflorescence on the twelfth day.

ONE HUNDRED AND FOURTEENTH CASE.

Jane Carter was slightly indisposed from the seventh till the tenth day, and had two or three pustules

ONE HUNDRED AND FIFTEENTH CASE.

William New was ill four days, and had about 100 pustules.

ONE HUNDRED AND SIXTEETH CASE.

Susan Sermon was taken ill on the ninth day, when she vomited. She continued feverish till the twelfth day. Only five pustules appeared.

ONE HUNDRED AND SEVENTEENTH, ONE HUNDRED AND EIGHTEENTH AND ONE HUNDRED AND NINETEETH CASES.

Alice Marshall, Frances Henley, and Harriet Marshall had no eruption, nor appeared to have any disorder from the inoculation. The local disease, however, was considerable in all these patients, and was attended with an efflorescence.

All the above patients who received the infection from Brown and May, have since been inoculated for the small-pox without effect.

ONE HUNDRED AND TWENTIETH CASE.

Mary Crouch, aged three years, was inoculated with matter taken from one of the pustules upon John Turner (see case forty-sixth). A tumor formed at the inoculated part in the usual manner, which was surrounded with an efflorescence; but neither fever nor eruption took place.

ONE HUNDRED AND TWENTY-FIRST AND ONE HUNDRED TWENTY-SECOND CASES.

Elizabeth Wood, aged three years, and Wm. Clifford, two years and a half old, were inoculated with cow-pox matter, taken from the arm of Mary Stewart, March 4th. Both these children were slightly indisposed about the tenth day, but neither of them had any pustules.

March 6.—The following persons were inoculated with the matter of cow-pox, taken from the arm of Ann Walker:

Amelia Restieux, 4 months old; John Bates, 6 weeks old; Martha Thompson, 2 years old; William London 6 months old; Frances Wallace, 3 years old; Joseph Rogers, 42 years old; Thomas Thoroughgood, 14 years old; and Ann Thoroughgood, 17 years old.

ONE HUNDRED AND TWENTY-THIRD AND ONE HUNDRED AND TWENTY-FOURTH CASES.

Amelia Restieux and John Bates neither experienced any disorder from the inoculation, nor had an eruption; but both their arms tumified in the usual manner.

ONE HUNDRED AND TWENTY-FIFTH CASE.

Martha Thompson was feverish from the eight till the tenth day. She had only one pustule.

ONE HUNDRED AND TWENTY-SIXTH CASE.

William London was taken ill on the tenth day; and vomited; but the following day was as well as usual. He had no eruption.

ONE HUNDRED AND TWENTY-SEVENTH CASE.

James London had no perceptible disorder; and no pustules appeared. On the tenth day the tumor was surrounded with an efflorescence.

ONE HUNDRED AND TWENTY-EIGHTH CASE.

Frances Wallace was feverish for two or three days; but no eruption ensued.

ONE HUNDERD AND TWENTY-NINTH CASE.

seph Rogers on the eighth day complained of pain in the axilla, and was affected with headache for two ree days; but he had no eruption.

ONE HUNDRED AND THIRTIETH CASE.

omas Thoroughgood made the same complaints as Rogers. He had thirty-three pustules.

ONE HUNDRED AND THIRTY-FIRST CASE.

n Thoroughgood was indisposed for six or seven days, but she had only ten pustules.
e preceding twelve patients have had variolous matter inserted in their arm without effect.
e following persons were inoculated with the matter taken from the pustules of Martha Streeton, viz: san Reeve, 18 months old; Ann Reeve, 5 weeks old; Susan Richardson, 13 years old, and Mary Adams, nths old.

ONE HUNDRED AND THIRTY-SECOND AND ONE HUNDRED AND THIRTY-THIRD CASES.

an Reeve and Ann Reeve were very little disordered by the inoculation; the former, however, had ty and the latter twelve pustules.

ONE HUNDRED AND THIRTY-FOURTH CASE.

an Richardson continued indisposed from the tenth till the fourteenth day, but she had only twelve p ules.

ONE HUNDRED AND THIRTY-FIFTH CASE.

ry Adams had about two hundred pustules; but the eruptive symptoms were not severe. The tumor i s case spread, and formed an irregular margin, which was studded with confluent pustules.

rch 7.—The disease was transferred from the pustules upon Sarah Dixon to the following children, viz: oline Harriskind, 4 years old; Wm. Harriskind, 2 years old; Daniel Harding, 14 weeks old; Eliza- Harding, 3 years old; James Waters, 12 years old, and Joseph Harding, 17 years old.

ONE HUNDRED AND THIRTY-SIXTH AND ONE HUNDRED AND THIRTY-SEVENTH CASES.

oline and Wm. Harriskind were feverish for two or three days. The former had 100, and the latter l welve pustules.

ONE HUNDRED AND THIRTY-EIGHTH AND ONE HUNDRED AND THIRTY-NINTH CASES.

niel and Elizabeth Harding were but very slightly indisposed from the inoculation. Daniel had fifteen small pustules; Elizabeth had only two.

ONE HUNDRED AND FORTIETH CASE.

nes Waters complained of headache, pains of his limbs and sore throat, from the eighth till the four h day. The tumor at the inoculated part was never much elevated above the skin, and had an angu border. He had 120 pustules.

ONE HUNDRED AND FORTY-FIRST CASE.

ph Harding was very slightly disordered, and had no pustules.

rch 8.—William Shipton, 4 years old; George Staits, 2 years old; Elizabeth Youngman, 3 months old; Dudley, 2 years old; William Cade, 10 months old, and William Piper, 4 months old, were inoculated he matter of cow-pox, taken from the arm of Esther Phipps.

ONE HUNDRED AND FORTY-SECOND, ONE HUNDRED AND FORTY-THIRD, ONE HUNDRED AND FORTY-FOURTH AND ONE HUNDRED AND FORTY-FIFTH CASES.

liam Shipton, Elizabeth Youngman, William Cade and William Piper, had no pustules: and none of appeared to be disordered from the inoculation, except Piper, who was a little feverish on the eighth An efflorescence took place around the tumor in all of them.

ONE HUNDRED AND FORTY-SIXTH CASE.

rge Staits was indisposed for two days, and had three or four small pustular eruptions.

ONE HUNDRED AND FORTY-SEVENTH CASE.

y Dudley was a little feverish on the ninth day, when a rash appeared which receded the following nd about fifty small pustules were discovered; these, however, disappeared in the course of twenty- ours.

ch 11.—Hannah Timms, 19 years old; Susan Timms, 17 years old; Jane Franklin, 12 years old, and Lee, 15 years old, were inoculated with the matter of cow-pox, taken from the arm of Mary Webb.

ONE HUNDRED AND FORTY-EIGHTH CASE.

nah Timms was affected with the febrile symptoms from the eighth till the sixteenth day, and had 165 es, all of which suppurated.

ONE HUNDRED AND FORTY-NINTH CASE.

h Timms was ill from the ninth till the fourteenth day. She had no eruption.

ONE HUNDRED AND FIFTIETH CASE.

Jane Franklin was very little indisposed from the inoculation, and had no eruption.

ONE HUNDRED AND FIFTY-FIRST CASE.

Henry Lee complained for two or three days, and had only one pustule.

March 13.—The following persons were inoculated with the matter of cow-pox, taken from the arm of Sarah Hat, viz.: Ann Spooner, twenty-one years old; Matthew Wall, fourteen years old; John Wall, ten years old; William Ockendon, twelve years old; Joseph Ockendon, ten years old; Willirm Jennings, seven years old; George Jennings, six years old; John Pluckrose, seven years old; Charlstte Webb, fourteen weeks old; Charles Dibden, three months old; Elizabeth Eaton, two years old; Charlotte Eaton, ten months old; and Joseph Pigg, eleven years old.

ONE HUNDRED AND FIFTY-SECOND CASE.

Ann Spooner was indisposed for three or four days and had 150 pustules.

ONE HUNDRED AND FIFTY-THIRD CASE.

Matthew Wall was a little indisposed for three days. He had ten pustules.

ONE HUNDRED AND FIFTY-FOURTH CASE.

John Wall made no complaint, and had no eruption.

ONE HUNDRED AND FIFTY-FIFTH CASE.

William Ockendon was indisposed from the eighth till the tenth day. He had only one pustule.

ONE HUNDRED AND FIFTY-SIXTH CASE.

Joseph Ockendon was ill for three days. He had no eruption.

ONE HUNDRED AND FIFTY-SEVENTH CASE.

William Jennings complained of headache two days. He had only one pustule.

ONE HUNDRED AND FIFTY-EIGHTH CASE.

George Jennings was disordered in the same manner as his brother William, but he had no eruption.

ONE HUNDRED AND FIFTY-NINTH CASE.

John Pluckrose made no complaint and had no eruption.

ONE HUNDRED AND SIXTIETH AND ONE HUNDRED SIXTY-FIRST CASES.

Charlotte Webb and Charles Dibden.—The former was perceptibly disordered by the inoculation, and ha no pustules. The latter was a little feverish on the ninth day and vomited. He had three pustules at th inoculated part only.

ONE HUNDRED AND SIXTY-SECOND AND ONE HUNDRED AND SIXTY-THIRD CASES.

Elizabeth Eaton and Charles Eaton were both slightly indisposed on the eleventh and twelfth day, an each had about twenty pustules.

ONE HUNDRED AND SIXTY-FOURTH CASE.

Joseph Pigg complained of a pain in the axilla, and of a slight headache for four days. He had fourtee pustules only.

March 13.—The following were inoculated with the matter of cow-pox, taken from the arm of Samu Lampart, viz.: Mary Ockendon, sixteen years old; Sarah Ockendon, seven years old; Sarah Stacey, twelv years old; Ann Stacey, seven years old; Mary Fuller, eleven years old; Isabella Barrett, eleven years old Mary Perry, three years old; Susan Vinicum, five months old; Elizabeth Rensden, eighteen months old Mary Ward, ten months old; William Terry, two months old; Caroline Poorey, three years old; An Poorey, eleven months old; John Langstaff, four years and a half old; Emma Lightfoot, thirteen month old; Daniel Sinclair, seven months old; M. H. Hills, eighteen weeks old; and Catharine Donaldson, nin teen months old.

ONE HUNDRED AND SIXTY-FIFTH CASE.

Mary Ockendon was indisposed from the ninth till the fourteenth day. She had only six pustules.

ONE HUNDRED AND SIXTY-SIXTH CASE.

Sarah Ockendon complained of headache, pain of her limbs, etc., from the tenth till the fourteenth da but only four pustules appeared.

ONE HUNDRED AND SIXTY-SEVENTH CASE.

Sarah Stacey was indisposed from the tenth till the fifteenth day. No pustules appeared.

ONE HUNDRED AND SIXTY-EIGHTH CASE.

Ann Stacey's case was similar to that of her sister Sarah.

ONE HUNDRED AND SIXTY-NINTH AND ONE HUNDRED AND SEVENTIETH CASES.

Mary Fuller and Isabella Barrett, both complained of the febrile symptoms from the ninth till the fo teenth day. The former had six, and the latter twenty pustules.

ONE HUNDRED AND SEVENTY-FIRST, ONE HUNDRED AND SEVENTY-SECOND AND ON HUNDRED AND SEVENTY-THIRD CASES.

Mary Perry, Susan Vinicum and Elizabeth Brensden did not appear to be indisposed from the inocul tion, and had no eruption; but the tumors in all were considerable, and surrounded by an efflorescence.

ONE HUNDRED AND SEVENTY-FOURTH CASE.

Mary Ward was a little feverish for two days, and a few small pustules appeared for one day only.

C HUNDRED AND SEVENTY-FIFTH, ONE HUNDRED AND SEVENTY-SIXTH, ONE HUN-
RED AND SEVENTY-SEVENTH AND ONE HUNDRED AND SEVENTY-EIGHTH CASES.

illiam Terry, Ann Poorey, Caroline Poorey and John. Langstaff had no pustules, neither did any of them
ar to be indisposed, except Ann Poorey, who was feverish for two days.

ONE HUNDRED AND SEVENTY-NINTH AND ONE HUNDRED EIGHTIETH CASES.

ma Lightfoot and Daniel Sinclair were both a little disordered for two or three days, and the former
our or five small pustules, but the latter had no eruption.

E HUNDRED AND EIGHTY-FIRST AND ONE HUNDRED AND EIGHTY-SECOND CASES.

n Hills and Catharine Donaldson had neither fever nor eruption,

ONE HUNDRED AND EIGHTY-THIRD CASE.

n Clarke was inoculated with the matter of cow-pox, taken from the arm of Peter Peters, which pro-
two or three small evanescent pustules; but no fever took place.
rch 15.—John Buckthorpe, twenty-two years old; John Cater, fourteen years of age; Susan Tomlins,
een years old; Maria Burgess, four years old; and Sophia Burgess, three years old, were inoculated for
ow-pox, with matter taken from the arm of Joseph Wrench.

ONE HUNDRED AND EIGHTY-FOURTH CASE,

n Buckthorpe was indisposed from the ninth till the fourteenth day. He had nearly 100 pustules.

ONE HUNDRED AND EIGHTY-FIFTH CASE.

n Cater complained of headache, etc., from the eighth till the eleventh day. He had forty pustules.

ONE HUNDRED AND EIGHTY-SIXTH CASE.

an Tomlins continued ill for three days. She had twenty-four pustules.

C HUNDRED AND EIGHTY-SEVENTH AND ONE HUNDRED AND EIGHTY-EIGHTH CASES

ria and Sophia Burgess were neither indisposed from the inoculation. Sophia had no pustules and
only three.
rch 18 —The following persons were inoculated with the matter of cow-pox, taken from the arm of
beth Platford: John Williams, seven months old; James Runtsman, three months old; Robert Lear
teen months old; John Selby, five months old; Samuel Ariell, two years old; James Ariell, five years
Henry Servy, two years and a half old; Sarah Lovell, four years old; Henry Lovell, two years old;
ca Salmon, nine months old; John Corwell, eight months old, and Francis Cundell, six months old.

ONE HUNDRED AND EIGHTY-NINTH CASE.

n Williams had no indisposition nor pustules. The tumor was surrounded with an efflorescence on
eventh day.

ONE HUNDRED AND NINETIETH CASE,

es Runtsman was a little feverish on the evening of the tenth. He had no eruption.

ONE HUNDRED AND NINETY-FIRST CASE.

ert Lear's case was similar to that of Runtsman.

ONE HUNDRED AND NINETY-SECOND CASE.

n Selby was feverish two days, and had forty pustules.

HUNDRED AND NINETY-THIRD AND ONE HUNDRED AND NINETY-FOURTH CASES

uel Ariell and James Ariell were both feverish on the tenth and eleventh days. but neither had any
ion.

E HUNDRED AND NINETY-FIFTH AND ONE HUNDRED AND NINETY-SIXTH CASES.

ry Servy and Sarah Lovell were disordered two days. The former had no pustules, the latter forty

ONE HUNDRED AND NINETY-SEVENTH CASE.

ry Lorell was ill three days, and had 170 pustules.

ONE HUNDRED AND NINETY-EIGHTH CASE.

ecca Salmon was very slightly indisposed, but had about 200 pustules, which were very small.

ONE HUNDRED AND NINETY-NINTH AND TWO HUNDREDTH CASES.

n Corwell and Francis Cundell were both feverish for two or three days; the former had thirty
d the latter twelve pustules.
the above patients, inoculated since the 6th of March, have subsequently had variolous matter in-
in their arms, except the two Ariells, but it produced no disorder.

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order that the progressive descent of the cow-pox infection from patient to patient,
ell as the magnitude of the disease which was excited by the inoculation, may be
rehended at one view, I have subjoined the following tabular statement.
nay be observed that the matter used for the preceding inoculations was not only
ed immediately from the pustular eruptions upon the teats of the cow, but also from
Rice, who contracted the disease by milking the infected cows. I begin with the
er. In the first and second divisions opposite to the names the age in years or
hs is recorded; in the third the number of days during which the febrile symptoms
nued; and in the last, the number of pustules produced:

TABLE.

	Years of Age	Months.	Days of Illness.	No. of Pustules.
From the cow to—				
M. Payne	2	6	3	0
E. Payne	..	4	5	0
Buckland	..	4	4	24
R. Payne	10	..	0	5
Redding	16	..	1	4
Collingridge	17	..	4	170
Pink	15	..	0	0
From M. and E. Payne to—				
Talley	14	..	..	..
Brown	15	..	..	..
From Collingride to—				
Mundy	25	..	2	15
George	25	..	6	530
Butcher	13	..	2	0
Dorset	19	..	1	0
From Buckland's pustules to—				
S. Price	13	..	2	6
From Redding to—				
Wife	14	..	0	4
From Mundy to—				
Slade	21	..	5	4
From George to—				
Tarrant	19	..	1	0
From Butcher to—				
Jewel	20	..	2	0
Bumpus	20	..	6	310
West	21	..	5	20
W. Hull	11	..	4	200
H. Hull	13	..	1	8
S. Hull	8	..	2	120
From Jewel to—				
Fisk	..	4	4	40
Reed	15	..	5	70
From S. Price to—				
Pedder	..	11	5	40
Hoole	..	5	5	102
Hickland	..	6	3	300
Morton	..	9	7	200
From Fisk to—				
Davy	..	3	1	3
Murrell	..	7	4	20
From Bumpus to—				
Dixon	19	..	4	174
W. Walker	..	11	0	0
Cummins	..	3	0	0
Ellistone	..	3	2	0
Dunn	..	8	3	0
From West to—				
So. Dobinson	5	..	0	0
Sarah Dobinson	3	..	0	0
H. Dobinson	1	..	1	0
Giles	20	..	30	30
From West to—				
Bigg	18	..	5	12
Briaris	16	..	4	2
From Reed to—				
Cowling	23	..	4	50
Webb	12	..	0	12
Mason	2	6	0	4
Goodluck	..	3	2	0
From Murrell to—				
Hatt	20	..	4	40
Platford	17	..	8	1000
From H. Dobinson to—				
Gunter	1	..	2	3
Sears	..	9	5	200
E. Giles	..	9	3	90
From Dixon's pustule to—				
C. Harriskind	4	..	4	100
W. Harriskind	2	..	3	12
D. Harding	..	3	1	15
E. Harding	3	..	1	2
Waters	12	6	1	20
J. Harding	17	..	1	10
From Webb to—				
H. Timms	19	..	7	165
From Webb to—				
S. Timms	17	..	5	0
Franklin	12	..	1	0
Lee	15	..	2	3
From Hatt to—				
Spooner	21	..	4	110
J. M. Wall	14	..	3	10
J. Wall	10	..	0	0
J. Ockendon	10	..	3	0
W. Ockendon	12	..	3	1
W. Jennings	7	..	2	1
G. Jennings	6	..	2	0
Pluckrose	7	..	0	0
C. Webb	..	3	0	0
Dibden	..	3	1	0
E. Eaton	2	..	2	2
C. Eaton	..	10	2	2
Pigg	11	..	4	14
From Platford to—				
Williams	..	3	0	0
Runtsman	..	3	1	0
Lear	1	5	1	0
Selby	..	5	2	40
S. Ariell	2	..	2	0
J. Ariell	3	..	2	0
Servy	2	6	2	0
S. Lovell	4	..	2	40
H. Lovell	2	..	3	170
Salmon	..	9	1	200
Corwell	..	8	3	30
Cundell	..	6	2	12
From S. Rice to—				
Harris	21	..	0	300
Bunker	15	..	3	3
Crouch	7	..	0	0
Fox	25	..	..	..
Dennis	23	..	..	..
From Crouch to—				
Keys	25	..	1	0
Turner	24	..	6	22
Morgan	1	..	5	0
From Mr. Coleman's cow to—				
Streeton	22	..	6	30
Smith	16	..	4	10
Meacock	30	..	5	35
From Turner to—				
Fairbrother	15	..	4	4
Calloway	19	..	3	2
Camplin	17	..	4	3
J. Turner	..	3	2	100
Buckley	..	3	1	0
Welch	..	3	1	0
From Streeton to—				
Grenvill	20	..	3	3
Honeywood	2	..	0	0
Rood	1	6	2	0
Mile	1	3	0	0
Jenkins	1	..	3	36
Barber	..	11	2	0
Dix	..	11	0	0
A. Walker	..	10	2	2
Brough	..	10	3	1
Towser	..	..	2	0
Knighton	..	..	2	0
Price	..	..	1	0
Spilsbury	..	..	4	0
May	..	..	1	0
Sully	..	..	1	0
Terry	..	..	1	0
Scott	..	..	0	0
Johnston	..	..	0	0
Stewart	..	..	0	0
From Smith to—				
Wrench	24	..	3	3
S. Peters	19	..	4	0
P. Peters	18	..	0	0
Brown	5	..	..	..

"I have observed three sorts of these irregular vesicles. The first is a single pearl-lored visicle, set in a hard dark red base, slightly elevated. It is larger and more bbate than the spurious *pustule* above represented, but much less than the genuine ve-le; its top is flattened, or sometimes a little depressed; but the margin is not rounded prominent. The second appears to be cellular, like the genuine vesicle, but is some-hat smaller and more sessile and has a sharp angulated edge.

"In the first, the areolar is usually diffuse, and of a dark rose color; in the second, it is newhat of a dilute scarlet color, radiated and very extensive, as from the sting of a sp; at other times, it has the form and color exhibited in Plate 1, No. 7. The areola ap-ars round these vesicles on the seventh or eighth day after inoculation, and continues re or less vivid for three days, during which the scab is completely formed. The scab smaller, and less regular than that which succeeds the genuine vesicle; it also falls off ch sooner; and, when seperated, leaves a smaller cicatrix which is sometimes angu-ed. The third irregular appearance is a vesicle without an areola." *On Vaccine In-ulation p.* 39-40.

As the degree of security afforded by these irregular vesicles is different different persons, and, as the matter taken from them often produces the me imperfect form of the disease, it can scarcely be doubted that many stakes and failures originated from this source. Dr. Willan therefore ggested the propriety of confining the practice of vaccination to those o had had a sufficiant education, and who had minutely attended to the bject. He also further recommended a strict examination of all persons culated between the first of January, 1799, and the first of January, 02, and urged the necessity of re-inoculation in every doubtful case.

With reference to the *cutaneous and glandular affections imputed to vaccina-n*, Dr. Willan did not observe any new disease of the skin referable to cow-pox. Dr. Willan endeavored to prove by a table, extracted from register books of the public dispensary in London, that the mber of cutaneous complaints was not increasing, their proportion all other diseases having been the same before the publication of Dr. nner's inquiry as in the sixth and seventh year of vaccination. *On ccine Inoculation*, p. 82.

The prime object of this division of our work on the prevention and arrest ontagious and infectious diseases, is to present those facts and original uments which illustrate the history and relations of small-pox and cow-, and which will furnish the sanitarians, physicians and legislators of isanna, and of all other States in the American Union the fundamental ciples for the enactment of wise, just and efficacious regulations and s for the absolute arrest of the most loathsome and destructive pesti-e which has ever afflicted the human race.

minute analysis therefore of the various publications * relative to vac-

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e append the following references in order to illustrate the rich and extensive nature of the contribu by various observers to the literature of cow-pox inoculation during the first five years after Jenner's uncement of his discovery:

Pearson's Letter on the Effects of Inoculating the Vaccine Disease. The London Medical Review agazine, by a Society of Physicians and Surgeons, vol. 1, March to August, 1799, p. 201, p. 349.

Woodville's Note on the Cow-pox, addressed to the Society of Physicians and Surgeons. London Med-w and Magazine, vol. 1, p 397.

ommunication from Dr. Hooper, respecting the Susceptibility of Persons Exposed to the Variolous gion after having had the Cow-pox. London Medical Review and Magazine, vol. 1, 1799, p. 505.

racts of Letters from Mr. Cooke, Apothecary at Glocester. London Medical Review and Magazine, , p. 591.

wers by Mr. Jacobs, Attorney-at-Law, Bristol, to Queries proposed by the Editor, respecting the ox. London Medical Review and Magazine, vol. 1, p. 599.

tatement of the Progress in the Vaccine Inoculation, and Experiments to determine some important belonging to the Vaccine Disease, by George Pearson, M. D., F. R. S. Physician to St. George's tal, etc. London Medical Review and Magazine, vol. 1. p. 612.

ervations on Dr. Hooper's Cases of the Cow-pox, by the Rev. J. D. Fosbrooke, M. A., Curate of y, Gloucestershire. London Medical Review and Magazine, vol. 1, p. 628.

mmunication concerning the Eruptions Resembling the Small-pox, which sometimes appear in the In-d Vaccine Disease, by George Pearson, M. D., F. R. S., Physician to St. George's Hospital. Lon-edical Review and Magazine, September, 1799-1800, vol. 2, p. 393.

Account of an Institution for Inoculating the Vaccine-pock, patronized by His Royal Highness the f York, at No. 36 Warwick street, Golden Square. London Medical Review and Magazine, vol. 2,

cination, would be a useless waste of time, for the essential facts will be found in the works of the original observers which have been, or which will be, dissecated and recorded in the progress of the present vindication of vaccination.

Remarks on Dr. Pearson's communication concerning the Eruptions resembling the Small-pox, which sometimes appear in the Inoculated Vaccine Disease. By the Rev. F. D. Fosbrooke, M. A. F. A. S., Curate of Horsley, Gloucestershire. London Medical Review and Magazine, vol. 2, p. 481.

Observations on the Cow-pox. By Mr. John Chapman, Surgeon at Ampthill, Bedfordshire; communicated by Dr. Pearson. M. D., F. R. S. London Medical Review and Magazine, March to June, 1800, vol. 3, p. 77.

Translation of a letter from Mr. Stromeger to Mr. Hunneman, concerning the Vaccine Inoculation practiced by him; dated Hanover, March 24, 1800. London Medical Review and Magazine, vol. 3, p. 174.

Information relating to the Cow-pox; communicated by Mr. R. J. Taynton, Surgeon at Bromley, in Kent. London Medical Review and Magazine, vol. 3, p, 179.

Cases and Observations tending to prove either the Infectious Nature of the Cow-pox, or the fallacy of some experiments made in London. By Mr. Blair, Surgeon of the Lock Hospital and Ferisbury Dispensary, etc. London Medical Review and Magazine, vol. 3, p. 188.

Remarks on Mr. Blair's paper concerning the Infectious Nature of Cow-pox, and on that of Mr. Taynton relative to the same subject. By John Resig, Member of the Royal College of Surgeons in London. London Medical Review and Magazine, 1800, vol. 3, p. 312.

Notice relating to the Cow-pox Institution. London Medical Review and Magazine, vol. 3, p. 316.

Observations on Certain Peculiarities of the Cow-pox. By Mr. John Resig, Member of the Royal College of Surgeons; with Additional Remarks by the Editors. London Medical Review and Magazine, vol. 3, p. 417.

Notice of a Testimonial in Favor of the Cow-pox; signed by several Physicians and Surgeons in London, June, 1800. London Medical Review and Magazine, vol. 3, p. 420.

Further Remarks on the Infectious Nature of the Cow-pox. By Mr. Blair, Surgeon of the York Hospital and Asylum, and of the Ferisbury Dispensary, etc. London Medical Review and Magazine, vol. 3, p. 421.

Some further Observations and Experiments on the Vaccine Inoculation. By G. Pearson, M. D., F. R. S., London, Physician to St. George's Hospital, London; in a letter to Dr. Duncan. London Medical Review and Magazine, vol. 3, p. 78.

Reflections on the Cow-pox, illustrated by cases to prove it an absolute security against the small-pox. Addressed to the public in a letter to Dr. Jenner, from William Fermor, Esq., octavo, 47 pages; Robson, London, 1800.

The vaccine matter employed by Mr. Fermor was originally derived from the Rev. Mr. Jenner, of Berkley. The total number of his cow-pox patients amounted to 326, of which number, 173 were afterwards inoculated with the small-pox without taking the infection. In only two instances did any vaccine eruptions appear, except on the inoculated part; a single pustule on the forehead of one, and likewise one on the arm of another.

An Address to the Public on the Advantages of Vaccine Inoculation; with the objections to it refuted. By Henry Jenner, Surgeon, F. L. S, etc., quarto, 19 pages; Cadell & Davies, London.

Some Observations on Vaccination, or the Inoculation of Cow-pox. By Richard Dunning, Surgeon, Plymouth Dock, and Member of the Medical Society of that Town and Plymouth, octavo, 122 pages; Cadell & Davies, London, 1800.

Observations on the Cow-pox. By William Woodville, M. D., Physician to the Small-pox and Inoculation Hospitals, octavo, 43 pages; Phillips, London, 1800.

Copy of a Testimonial in favor of the Vaccine Inoculation, signed by thirty-six Physicians and Surgeons in London. London Medical Review and Magazine, vol. 4, July to December, 1800, p. 60.

Further information respecting the case of Cow-pox which was lately communicated by Mr. Malim, with observations by the Editor. London Medical Review and Magazine, vol. 4, 1800, p. 208.

Additional Observations on the Variform Eruptions which have occurred in the Cow-pox, with some further remarks on the origin of the disease. By Mr. Ring, Member of the Royal College of Surgeons in London. London Medical Review and Magazine, July to October, 1800, vol. 4. p. 91.

On the Introduction of the Vaccine Inoculation at Paris (A. Monsieur Pearson, Médecin de l'Hôpital de l'Inoculation Vaccine à Londres). London Medical Review and Magazine, vol. 4, p. 204.

Further Remarks on Variolated Vaccine Matter, and on Mr. Malim's case of Cow-pox. By Mr. Ring, Member of the Royal College of Surgeons in London. London Medical Review and Magazine, vol. 4. p. 307.

Facts relating to the origin of the Cow-pox, communicated by Sir Christopher Pegge, Knight, M. D., and Reader of Anatomy, Oxford. London Medical Review and Magazine, November, 1800, to February, 1801, vol. 5, p. 76.

Authentic information relative to some extraordinary cases of the Cow-pox at Clapham. By Mr. Pears, F. M. S., etc.; with a postscript by the Editors. London Medical Review and Magazine, vol. 5, p. 276.

Facts concerning the Eruptions and Contagious Nature of the Cow-pox. By Mr. Harrup, of Cholsham. London Medical Review and Magazine, vol. 5, p. 289.

Rapport sur la Vaccine; ou Réponse aux Questions Rédigées par les Commissaires de l'Ecole de Médecine de Paris, sur la Pratique et les Résultats de cête Nouvelle Inoculation en Angleterre, et dans les Hôspices des Londres, ou on l'Adopté Par A Aubert, Docteur en Médecine; Paris, An 9.

Copy of a letter on the Cow-pox, from Dr. Marshall to Mr. Ring, dated Gibralter, August 23, 1800. London Medical Review and Magazine, vol. 5, p. 100.

A Concise View of Circumstances and Proceedings respecting Vaccine Inoculation, etc., etc. London, 1800.

A concise view of all the most important facts which have hitherto appeared concerning the Cow-pox. By C. R. Aikin, Member of the Royal College of Surgeons in London; Phillips, London, 1800.

A comparative statement of Facts and Observations relative to the Cow-pox; published by Drs. Jenner and Woodville, London, 1800.

Copy of a letter from Dr. Marshall to Mr. Ring, dated Mahon, Island of Minorca, September, 1800. London Medical Review and Magazine, vol. 5, p. 198.

Copy of a letter from Dr. Marshall to Mr. Ring, dated H. M. S. Fondrazars, Gibraltar Bay, October 16, 1800. London Medical Review and Magazine, vol. 5, p. 199.

Additional Signatures to the Testimonial in favor of Vaccine Inoculation. London Medical Review and Magazine, vol. 5, p 315.

That the labors of Dr. Jenner were recognized by the wisest and most able representatives of his own country, within ten years after the announcement of his discovery, is shown by the following report of the Royal College ot Physicians of London, on vaccination in 1807.

This report, with the accompanying opinions of the Royal College of Physicians of Edinburgh and Dublin, and of the Royal College of Surgeons of London, of Dublin and of Edinburgh, made in accordance with an address from the House of Commons and in compliance with the commands of the King of England, should be regarded as one of the ablest and most impartial of the testimonials which have at different times and in different countries been received in favor of vaccination.

REPORT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON, ON VACCINATION. WITH AN APPENDIX, CONTAINING THE OPINIONS OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH AND DUBLIN; AND OF THE ROYAL COLLEGES OF SURGEONS OF LONDON, OF DUBLIN, AND OF EDINBURGH.

The Royal College of Physicians of London, having received his Majesty's commands, n compliance with an address from the House of Commons, "to inquire into the state of vaccine inoculation in the United Kingdom, to report their opinion and observations upon that practice, upon the evidence which has been adduced in its support, and upon he causes which have hitherto retarded its general adoption;" have applied themselves diligently to the business referred to them.

Deeply impressed with the importance of an inquiry which equally involves the lives f individuals and the public prosperity, they have made every exertion to investigate he subject fully and impartially. In aid of the knowledge and experience of the members of their own body, they have applied separately to each of the Licentiates of the ollege; they have corresponded with the Colleges of Physicians of Dublin and Edinurgh; with the Colleges of Surgeons of London Edinburgh and Dublin; they have alled upon the societies established for vaccination, for an account of their practice, to what extent it has been carried on, and what has been the result of their experience; nd they have, by public notice, invited individuals to contribute whatever information hey had severally collected. They have in consequence been furnished with a mass of vidence communicated with the greatest readiness and candor, which enables them to peak with confidence upon all the principal points referred to them.

I. During eight years which have elapsed since Dr. Jenner made his discovery public he progress of vaccination has been rapid, not only in all parts of the United Kingdom, ut in every quarter of the civilized world. In the British Islands some hundred thousnds have been vaccinated; in our possession in the East Indies upwards of 800,000, and mong the nations of Europe the practice has become general. Professional men have ubmitted it to the fairest trials, and the public have, for the most part, received it without prejudice. A few indeed have stood forth the adversaries of vaccination, on the same

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The Report of the Cow-pock Inoculation from the Practice at the Vaccine Pock Institution, during the ears 1800, 1801 and 1802. Read at the General Meeting of the Governors February 7, 1803, at the Shakare Tavern; written by the Physicians to the Institution; to which are prefixed two painted engravings Cow-pox and other Eruptions. London, 1803.

Third Annual Report of the Vaccine Pock Institution for Inoculating the Poor, Supported by the Voltary Subscriptions, Benefactions and legacies of the Public; From its Foundation, December 2, 1800, to cember 31, 1802.

A case showing the impropriety of taking the whole of the virus out of a vaccine vesicle: communicated Dr. Frederick Dalcho, Secretary to the Medical Society of South Carolina, to Dr. Michell, April 27, 1805. e Medical Repository, etc., vol 3, p. 204.

The cases reported by Dr. Frederick Dalcho, occurred in May, 1802.

Remarks on the Cow-pox Inoculation, by Mr. Charles Brandon Frye."

From his own experience Mr. Frye asserted, *first*, that whatever *has been said against the sufficiency* of *w-pox* matter, as a security against variolous infection, may be also *said with truth against Small-pox mat*as a similar security; *second*, that the subsequent ill effects which *have been said* to follow Cow-pox, e, in a ten-fold degree, followed Small pox; *third*, that many instances of mortality have happened in all-pox inoculation, while amongst *all which has* been said, not a single example appears of death from w-pox.

grounds as their predecessors who opposed the inoculation for the small-pox, falsely led by hypothetical reasoning in the investigation of a subject which must be supported, or rejected, upon facts and observation only. With these few exceptions, the testimony in favor of vaccination has been most strong and satisfactory, and the practice of it, though it has received a check in some quarters, appears still to be upon the increase in most ports of the United Kingdom.

II. The College of Physicians, in giving their observations and opinions on the practice of vaccination, think it right to premise, that they advance nothing but what is supported by the multiplied and unequivocal evidence which has been brought before them, and they have not considered any facts as proved, but what have been stated from actual observation.

Vaccination appears to be in general perfectly safe; the instances to the contrary being extremely rare. The disease excited by it is slight, seldom preventing those under it from following their ordinary occupations. It has been communicated with safety to pregnant women, to children during dentition, and in their earliest infancy; in all which respects it possesses material advantages over inoculation for the small-pox; which, though productive of a disease generally mild, yet sometimes occasion alarming symptoms, and is in a few cases fatal.

The security derived from vaccination against the small-pox, if not absolutely perfect is as nearly so as can perhaps be expected from any human discovery; for amongst several hundred thousand cases, with the results which the College have been made acquainted, the number of alleged failures have been surprisingly small, so much so, as to form certainly no reasonable objection to the general adoption of vaccination, for it appears that there is not nearly so many failures in a given number of vaccinated persons, as there are deaths in an equal number of persons inoculated for the small-pox. Nothing can more cleary demonstrate the superiority of vaccination over the inoculation of the small-pox, than this consideration; and it is a most important fact, which has been confirmed in the course of this inquiry, that in almost every case where the small-pox has succeeded vaccination, whether by inoculation or by casual infection, the disease has varied much from its ordinary course; it has neither been the same in violence, nor in the duration of its symptoms, but has, with very few exceptions been remarkably mild, as if the small-pox had been deprived, by the previous vaccine disease, of all its usual malignity.

The testimonies before the College of Physicians are very decided in declaring, that vaccination does less mischief to the constitution and less frequently gives rise to other diseases, than small-pox, either natural or inoculated.

The College feel themselves called upon to state this strongly, because it has been objected to vaccination, that it produces new, unheard-of, and monstrous diseases. Of such assertions no proofs have been produced, and, after diligent inquiry, the College believe them to have been either the inventions of designing, or the mistakes of ignorant men. In these respects then, in its mildness, its safety, and its consequences, the individual may look for the peculiar advantages of vaccination. The benefits which flow from it to society are infinitely more considerable; it spreads no infection, and can be communicated only by inoculation. It is from a consideration of the pernicious effects of the small-pox, that the real value of vaccination is to be estimated. The natural small-pox has been supposed to destroy a sixth part of all whom it attacks; and that even by inoculation, where that has been general in parishes and towns, about one in 300 has usually died. It is not sufficiently known, or not adverted to, that nearly one-tenth, some years more than one-tenth of the whole mortality in London, is occasioned by the small-pox; and however beneficial the inoculation of the small-pox may have been to individuals, it appears to have kept up a constant source of contagion, which has been the means of increasing the number of deaths by what is called the natural disease. It cannot be doubted that this mischief has been extended by the inconsiderate manner in which great numbers of persons, even since the introduction of vaccination, are still every year inoculated with the small-pox, and afterwards required to attend two or three times a week at the places of inoculation, through every stage of their illness.

From this, then, the public are to expect the great and uncontroverted superiority of vaccination, that it communicates no casual infection, and, while it is a protection to the individual, it is not prejudicial to the public.

III. The College of Physicians, in reporting their observations and opinions on the evidence adduced in support of vaccination, feel themselves authorized to state that a body of evidence so large, so temperate, and so consistent, was perhaps never before collected upon any medical question. A discovery so novel, and to which there was nothing analogous known in nature, though resting on the experimental observations of the inventor, was at first received with diffidence; it was not, however, difficult for others to repeat his experiments, by which the truth of his observations was confirmed, and the doubts of the cautious were gradually dispelled by extensive experience. At the commencement of the practice, almost all that were vaccinated were afterwards submitted to

e inoculation of the small-pox, many underwent this operation a second, and even a ird time, and the uniform success of these trials quickly bred confidence in the new scovery. But the evidence of the security derived from vaccination against the small- x does not rest alone upon those who afterwards underwent variolous inoculation, al- ough amounting to many thousands ; for it appears, from numerous observations com- nicated to the College, that those who have been vaccinated are equally secure against e small-pox does not rest alone upon those who afterwards underwent variolous inocu- tion, although amounting to many thousands; for it appears, from numerous observa- ns communicated to the College, that those who have been vaccinated are equally se- re against the contagion of epidemic small-pox. Towns, indeed, and districts of the untry, in which vaccination had been general, have afterwards had the small-pox valent on all sides of them without suffering from the contagion. There are also in e evidence a few examples of epidemic small-pox having been subdued by a general ccination. It will not, therefore, appear extraordinary that many who have commu- ated their observations should state, that though at first they thought unfavorably of e practice, experience had now removed all their doubts.

t has been already mentioned that the evidence is not universally favorable, although s in truth nearly so, for there are a few who entertain sentiments differing widely m those of the great majority of their brethren. The College, therefore, deemed it ir duty, in a particular manner, to inquire upon what grounds and evidence the op- ers of vaccination rested their opinions. From personal examination, as well as from ir writings, they endeavored to learn the full extent and weight of their objections. y found them without experience in vaccination, supporting their opinions by hear- information and hypothetical reasoning; and, upon investigating the facts which y advanced, they found them to be either misapprehended or misrepresented, or that y fell under the description of cases of imperfect small-pox before noticed, and which College have endeavored fairly to appreciate.

he practice of vaccination is but of eight years standing, and its promoters, as well opponents, must keep in mind that a period so short is too limited to ascertain every nt, or to bring the art to that perfection of which it may be capable. The truth of s will readily be admitted by those acquainted with the history of inoculation for the ll-pox. Vaccination is now, however, well understood, and its character accurately cribed. Some deviations from the usual course have occasionally occurred, which the hor of the practice has called spurious cow-pox, by which the public have been led, as if there were a true and false cow-pox; but it appears that nothing more was nt than to express irregularity or difference from that common form and progress of vaccine pustule from which its efficacy is inferred. Those who perform vaccination ht, therefore, to be well instructed, and should have watched with the greatest care regular progress of the pustule, and learnt the most proper time for taking the mat- There is little doubt that some of the failures are to be imputed to the inexperience he early vaccinators, and it is not unreasonable to expect that further observations yet suggest many improvements that will reduce the number of anamalous cases, furnishing the means of determining with greater precision, when the vaccine dis- has been effectually received.

hough the College of Physicians have confined themselves in estimating the evidence uch facts as have occurred in their own country, because the accuracy of them could be ascertained, they cannot be insensible to the confirmation these receive from the rts of the successful introduction of vaccination, not only into every part of Europe, throughout the vast continents of Asia and America.

. Several causes have had a partial operation in retarding the general adoption of ination ; some writers have greatly underrated the security it affords, while others considered it to be of a temporary nature only ; but if any reliance is to be placed e statements which have been laid before the College, its power of protecting the an body from the small-pox, though not perfect indeed, is abundantly sufficient to mmend it to the prudent and dispassionate, especially as the small-pox, in the few nces where it has subsequently occurred, has been generally mild and transient. pinion that vaccination affords but a temporary security is supported by no analogy ture, nor by the facts which have hitherto occurred. Although the experience of ne inoculation be only of a few years, yet the same disease, contracted by the ers of cows, in some districts, has been long enough known to ascertain that in them, ast, the unsusceptible of the cow-pox contagion does not wear out of time. Another is the charge against vaccination of producing various new diseases of frightful nonstrous appearance.

resentations of some of these have been exhibited in print in a way to alarm the gs of parents, and to infuse dread and apprehension into the minds of the unin- d. Publications with such representations have been widely circulated, and h they originate either in gross ignorance, or willful misrepresentation, yet have essened the confidence of many, particularly of the lower classes, in vaccination ;

No permanent effects, however, in retarding the progress of vaccination need be apprehended from such causes, for, as soon as the public shall view them coolly and without surprise, they will excite contempt, and not fear.

Though the College of Physicians are of opinion that the progress of vaccination has been retarded in a few places by the above causes, yet they conceive that its general adoption has been prevented by causes far more powerful, and of a nature wholly different. The lower orders of society can hardly be induced to adopt precautions against evils which may be at a distance; nor can it be expected from them, if these precautions are attended with expense. Unless, therefore, from the immediate dread of epidemic small-pox, neither vaccination nor inoculation appear at any time to have been general, and when the cause of terror has passed by, the public have relapsed again into a state of indifference and apathy, and the satutary practice has come to a stand. It is not easy to suggest a remedy for an evil so deeply imprinted in human nature. To inform and instruct the public mind may do much, and it will probably be found that the progress of vaccination in different parts of the United Kingdom will be in proportion to that instruction. Were encouragement given to vaccination, by offering it to the poorer classes without expense, there is little doubt that it would in time supersede the inoculation for the small-pox, and thereby various sources of variolous infection would be cut off; but till vaccination becomes general, it will be impossible to prevent the constant recurrence of the natural small-pox by the means of those who are inoculated, except it should appear proper to the legislature to adopt, in its wisdom, some measure by which those who still, from terror or prejudice, prefer the small-pox to the vaccine disease, may, in thus consulting the gratification of their own feelings, be prevented from doing mischief to their neighbors.

From the whole of the above considerations, the College of Physicians feel it their duty strongly to recommend the practice of vaccination. They have been led to this conclusion by no preconceived opinion, but by the most unbiased judgment, formed from an irresistable weight of evidence, which has been laid before them. For when the number, the respectability, the disinterestedness and the extensive experience of its advocates is compared with the feeble and imperfect testimonies of its few opposers; and when it is considered that many, who were once adverse to vaccination, have been convinced by further trials, and are now to be ranked among its warmest supporters, the truth seems to be established as firmly as the nature of such a question admits; so that the College of Physicians conceive that the public may reasonably look forward with some degree of hope to the time when all opposition shall cease, and the general concurrence of mankind shall at length be able to put an end to the ravages, at least, if not to the existence, of small-pox.

LUCAS PEPYS, President.

Royal College of Physicians, April 10, 1807.

JA. HARVEY, Register.

APPENDIX.

NO. 1.

To the Royal College of Physicians of London:

Gentlemen—I am ordered by the King and Queen's College of Physicians, in Ireland, to thank the Royal College of Physicians, of London, for the communication they have had the honor to receive from them, of certain propositions relative to vaccination whereon His Majesty has been pleased to direct an inquiry to be instituted, and in the prosecution of which the co-operation of the College in Ireland is requested.

And I am directed to acquaint you that the said College having referred the investigation of these propositions to a committee, have received from them a report, of which the inclosed is a copy; and that they desire the same may be considered as containing their opinion upon the subject. I have the honor to be, gentlemen,

Your most obedient humble servant,

HUGH FERGUSON, Register.

By order of the King and Queen's College of Physicians in Ireland.

Dublin, Nov. 11, 1806.

"The practice of vaccination was introduced in this city about the beginning of the year 1801, and appears to have made inconsiderable progress at first. A variety of causes operated to retard its general adoption, amongst which the novelty of the practice, and the extraordinary effects attributed to vaccination, would naturally take the lead.

Variolous inoculation had been long, almost exclusively, in the hands of a particular nch of the profession, whose prejudices and interests were strongly opposed to the r practice; and by their being the usual medical attendants in families, and espec- y employed in the diseases of children, their opinions had greater effect upon the nds of parents. The small-pox is rendered a much less formidable disease in this ntry by the frequency of inoculation for it, than it is in other parts of His Majesty's inions, where prejudices against inoculation have prevailed; hence, parents, not un- urally, objected to the introduction of a new disease, rather than not recur to that, h the mildness and safety of which they were well acquainted.

In the beginning of the year 1804, the Cow-Pox Institution was established, under t patronage of the Earl of Hardwicke, and it is from this period that we may date the eral introduction of vaccination into this city, and throughout all parts of Ireland. The success of the institution, in forwarding the new practice, is to be attributed in eat measure to the respectability of the gentlemen who superintend it, and to the gence, zeal and attention of Dr. Labatt, their secretary and inoculator. In order to v the progress which has been made in extending the vaccination, your committee r to the report of the Cow-Pox Institution for the last two years, and to extracts their Register for the present year:

YEAR.	Patients Inoculated.	Packets Issued to Practitioners in General.	Packets to Army Surgeons.
1[illegible]	578	776	236
1[illegible]	1032	1124	178
1[illegible]	1356	1340	220
Total	2966	3240	634

In the above statement the numbers are averaged to the end of the present year, on supposition of patients resorting to the institution as usual. The correspondence of stitution appears to be very general throughout every part of Ireland, and by ac- ts received, as well from medical practitioners as others, the success of vaccination s to be uniform and effectual. At the present period, in the opinion of your com- ee, there are few individuals in any branch of the profession who oppose the prac- of vaccination in this part of His Majesty's dominions.

t is the opinion of your committee that the practice of cow-pox inoculation is safe, hat it fully answers all the purposes that have been intended by its introduction. e same time, your committee is willing to allow that doubtful cases have been re- d to them as having occurred, of persons suffering from small-pox, who had been ously vaccinated. Upon minute investigation, however, it has been found that supposed instances originated generally in error, misrepresentation, or the difficulty criminating between small-pox and other eruptions, no case having come to the ledge of your committee, duly authenticated by respectable and competent judges, uine small-pox succeeding the regular vaccine disease.

he practice of vaccination becomes every day more extended; and, when it is con- d that the period at which it came into general use in Ireland is to be reckoned so late a date, your committee is of opinion that it has made as rapid a progress as be expected.

[Signed] "JAMES CLEGHORN,
"DANIEL MILLS,
"HUGH FERGUSON."

NO. II.

PHYSICIAN'S HALL, EDINBURGH, November 26, 1807.

tlemen—The Royal College of Physicians of Edinburgh have but little opportunity elves of making observations of vaccination, as that practice is entirely conducted geon apothecaries and other medical practitioners out of this College, and as the s produced by it are so inconsiderable and slight that the aid of a physician is never ed.

College know that in Edinburgh it is universally approved by the profession, and higher and middle ranks of the community, and that it has been much more gen- adopted by the lower orders of the people than even the inoculation of small-pox nd they believe the same to obtain all over Scotland.

th regard to any causes which have hitherto prevented its general adoption, they quainted with none, except the negligence or ignorance of parents among the com- eople, or their mistaken ideas of the impropriety or criminality of being accessory production of any disease among their children, or the difficulty or impossibility, e of our country districts, of producing vaccine matter, or a proper person to vac-

The evidence in favor of vaccination appeared to the Royal College of Physicians of Edinburgh so strong and decisive that in May last they spontaneously and unanimously elected Dr. Jenner an Honorary Fellow of their College—a mark of distinction which they rarely confer, and which they confine almost exclusively to foreign physicians of the first eminence.

They did this with a view to publish their opinion with regard to vaccination, and in testimony of their conviction of the immense benefits which have been, and which will in future be derived to the world, from inoculation for the cow-pox, and as a mark of their sense of Dr. Jenner's very great merits and ability in introducing and promoting this invaluable practice.

I have the honor to be, gentlemen, your most obedient humble servant,

TH. SPENS, C. R. M. Ed. Pr.

To the Royal College of Physicians of London.

NO. III.

At a Special Court of Assistants of the Royal College of Surgeons, convened by order of the Master, and holden at the College on the seventeenth day of March, 1807; Mr. Governor Lucas in the chair; Mr. Long, as Chairman of the Board of Curators, reported: That the Board are now ready to deliver their report on the subject of vaccination.

It was then moved, seconded, and resolved, that a report from the Board of Curators, on the subject of vaccination, which was referred to their consideration by the Court of Assistants, on the twenty-first day of November last, be received.

Mr. Long then delivered to Mr. Governor Lucas (presiding in the absence of the Master) a report from the Board of Curators.

It was then moved, seconded, and resolved, that the report delivered by Mr. Long be read; and it was read accordingly, as follows:

TO THE COURT OF ASSISTANTS OF THE ROYAL COLLEGE OF SURGEONS IN LONDON:

The Report of the Board of Curators, on the subject of Vaccination, referred to them by the Court, on the twenty-first day of November, 1806; made to the Court on the seventeenth of March, 1807.

The Court of Assistants having received a letter from the Royal College of Physicians of London, addressed to this College, stating, that His Majesty had been graciously pleased, in compliance with an address from the Honorable House of Commons, to direct his Royal College of Physicians of London to inquire into the state of vaccination in the United Kingdom, to report their observations and opinion upon that practice, upon the evidence adduced in its support, and upon the causes which have hitherto retarded its general adoption; that the college was then engaged in the investigation of the several propositions thus referred to them, and requesting the college to co-operate and communicate with them, in order that the report thereupon might be made as complete as possible.

And having, on the twenty-first day of November last, referred such letter to the consideration of the Board of Curators, with authority to take such steps respecting the contents thereof as they should judge proper, and report their proceedings thereon, from time to time, to the Court; the Board proceeded with all possible dispatch to the consideration of the subject.

The Board being of the opinion that it would be proper to address circulars to members of the College, with a view of collecting evidence, they submitted to the consideration of the Court, holden on the fifteenth day of December last, the drafts of such letters as appeared to them best calculated to answer that end; and the same having been approved by the Court, they caused copies thereof to be sent to all the members of the College, in the United Kingdom, whose residence could be ascertained, in the following form, viz:

"*Sir*—The Royal College of Surgeons being desirous to co-operate with the Royal College of Physicians of London, in obtaining information respecting vaccination, submit to you the following questions, to which the favor of your answer is requested.

"By order of the Court of Assistants. OKEY BELFOUR, Secretary.

"Lincoln's Inn Fields, December 15, 1806.

"QUESTIONS.

"*First*—How many persons have you vaccinated?

"*Second*—Have any of your patients had the small-pox after vaccination? In the case of every such occurrence, at what period was the vaccine matter taken from the vesicle? How was it preserved? How long before it was inserted? What was the ap-

"I have observed three sorts of these irregular vesicles. The first is a single pearl-colored visicle, set in a hard dark red base, slightly elevated. It is larger and more globate than the spurious *pustule* above represented, but much less than the genuine vesicle; its top is flattened, or sometimes a little depressed; but the margin is not rounded or prominent. The second appears to be cellular, like the genuine vesicle, but is somewhat smaller and more sessile and has a sharp angulated edge.

"In the first, the areolar is usually diffuse, and of a dark rose color; in the second, it is somewhat of a dilute scarlet color, radiated and very extensive, as from the sting of a asp; at other times, it has the form and color exhibited in Plate 1, No. 7. The areola appears round these vesicles on the seventh or eighth day after inoculation, and continues more or less vivid for three days, during which the scab is completely formed. The scab smaller, and less regular than that which succeeds the genuine vesicle; it also falls off much sooner; and, when seperated, leaves a smaller cicatrix which is sometimes angulated. The third irregular appearance is a vesicle without an areola." *On Vaccine Inoculation p.* 39-40.

As the degree of security afforded by these irregular vesicles is different in different persons, and, as the matter taken from them often produces the same imperfect form of the disease, it can scarcely be doubted that many mistakes and failures originated from this source. Dr. Willan therefore suggested the propriety of confining the practice of vaccination to those who had had a sufficiant education, and who had minutely attended to the subject. He also further recommended a strict examination of all persons inoculated between the first of January, 1799, and the first of January, 1802, and urged the necessity of re-inoculation in every doubtful case.

With reference to the *cutaneous and glandular affections imputed to vaccination*, Dr. Willan did not observe any new disease of the skin referable to the cow-pox. Dr. Willan endeavored to prove by a table, extracted from the register books of the public dispensary in London, that the number of cutaneous complaints was not increasing, their proportion to all other diseases having been the same before the publication of Dr. Jenner's inquiry as in the sixth and seventh year of vaccination. *On Vaccine Inoculation*, p. 82.

The prime object of this division of our work on the prevention and arrest of contagious and infectious diseases, is to present those facts and original documents which illustrate the history and relations of small-pox and cow-pox, and which will furnish the sanitarians, physicians and legislators of Louisanna, and of all other States in the American Union the fundamental principles for the enactment of wise, just and efficacious regulations and laws for the absolute arrest of the most loathsome and destructive pestilence which has ever afflicted the human race.

A minute analysis therefore of the various publications * relative to vac-

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* We append the following references in order to illustrate the rich and extensive nature of the contributions by various observers to the literature of cow-pox inoculation during the first five years after Jenner's announcement of his discovery:

Mr. Pearson's Letter on the Effects of Inoculating the Vaccine Disease. The London Medical Review and Magazine. by a Society of Physicians and Surgeons, vol. 1, March to August, 1799, p. 201, p. 349.

Mr. Woodville's Note on the Cow-pox, addressed to the Society of Physicians and Surgeons. London Medical Review and Magazine, vol. 1, p. 397.

A communication from Dr. Hooper, respecting the Susceptibility of Persons Exposed to the Variolous Contagion after having had the Cow-pox. London Medical Review and Magazine, vol. 1, 1799, p. 505.

Extracts of Letters from Mr. Cooke, Apothecary at Glocester. London Medical Review and Magazine, vol. 1, p. 591.

Answers by Mr. Jacobs, Attorney-at-Law, Bristol, to Queries proposed by the Editor, respecting the Cow-pox. London Medical Review and Magazine, vol. 1, p. 599.

A statement of the Progress in the Vaccine Inoculation, and Experiments to determine some important points belonging to the Vaccine Disease, by George Pearson, M. D., F. R. S. Physician to St. George's Hospital, etc. London Medical Review and Magazine, vol. 1. p. 612.

Observations on Dr. Hooper's Cases of the Cow-pox, by the Rev. J. D. Fosbrooke, M. A., Curate of Sudeley, Gloucestershire. London Medical Review and Magazine, vol. 1, p. 628.

A communication concerning the Eruptions Resembling the Small-pox, which sometimes appear in the Inoculated Vaccine Disease, by George Pearson, M. D., F. R. S., Physician to St. George's Hospital. London Medical Review and Magazine, September, 1799-1800, vol. 2, p. 393.

An Account of an Institution for Inoculating the Vaccine-pock, patronized by His Royal Highness the Duke of York, at No. 36 Warwick street, Golden Square. London Medical Review and Magazine, vol. 2, p. 175.

cination, would be a useless waste of time, for the essential facts will be found in the works of the original observers which have been, or which will be, dissected and recorded in the progress of the present vindication of vaccination.

Remarks on Dr. Pearson's communication concerning the Eruptions resembling the Small-pox, which sometimes appear in the Inoculated Vaccine Disease. By the Rev. F. D. Fosbrooke. M. A. F. A. S., Curate of Horsley, Gloucestershire. London Medical Review and Magazine, vol. 2, p. 481.

Observations on the Cow-pox. By Mr. John Chapman, Surgeon at Ampthill, Bedfordshire; communicated by Dr. Pearson. M. D., F. R. S. London Medical Review and Magazine, March to June, 1800, vol. 3, p. 77.

Translation of a letter from Mr. Stromeger to Mr. Hunneman, concerning the Vaccine Inoculation practiced by him; dated Hanover, March 24, 1800. London Medical Review and Magazine, vol. 3, p. 174.

Information relating to the Cow-pox; communicated by Mr. R. J. Taynton, Surgeon at Bromley, in Kent. London Medical Review and Magazine, vol. 3, p, 179.

Cases and Observations tending to prove either the Infectious Nature of the Cow-pox, or the fallacy of some experiments made in London. By Mr. Blair, Surgeon of the Lock Hospital and Ferisbury Dispensary, etc. London Medical Review and Magazine, vol. 3, p. 188.

Remarks on Mr. Blair's paper concerning the Infectious Nature of Cow-pox, and on that of Mr. Taynton relative to the same subject. By John Resig, Member of the Royal College of Surgeons in London. London Medical Review and Magazine, 1800, vol. 3, p. 312.

Notice relating to the Cow-pox Institution. London Medical Review and Magazine, vol. 3, p. 316.

Observations on Certain Peculiarities of the Cow-pox. By Mr. John Resig, Member of the Royal College of Surgeons; with Additional Remarks by the Editors. London Medical Review and Magazine, vol. 3, p. 417.

Notice of a Testimonial in Favor of the Cow-pox; signed by several Physicians and Surgeons in London, June, 1800. London Medical Review and Magazine, vol. 3, p. 420.

Further Remarks on the Infectious Nature of the Cow-pox. By Mr. Blair, Surgeon of the York Hospital and Asylum, and of the Ferisbury Dispensary, etc. London Medical Review and Magazine, vol. 3, p. 421.

Some further Observations and Experiments on the Vaccine Inoculation. By G. Pearson, M. D., F. R. S., London, Physician to St. George's Hospital, London; in a letter to Dr. Duncan. London Medical Review and Magazine, vol. 3, p. 78.

Reflections on the Cow-pox, illustrated by cases to prove it an absolute security against the small-pox. Addressed to the public in a letter to Dr. Jenner, from William Fermor, Esq., octavo, 47 pages; Robson, London, 1800.

The vaccine matter employed by Mr. Fermor was originally derived from the Rev. Mr. Jenner, of Berkley. The total number of his cow-pox patients amounted to 326, of which number, 173 were afterwards inoculated with the small-pox without taking the infection. In only two instances did any vaccine eruptions appear, except on the inoculated part; a single pustule on the forehead of one, and likewise one on the arm of another.

An Address to the Public on the Advantages of Vaccine Inoculation; with the objections to it refuted. By Henry Jenner, Surgeon, F. L. S , etc., quarto, 19 pages; Cadell & Davies, London.

Some Observations on Vaccination, or the Inoculation of Cow-pox. By Richard Dunning, Surgeon, Plymouth Dock, and Member of the Medical Society of that Town and Plymouth, octavo, 122 pages; Cadell & Davies, London, 1800.

Observations on the Cow-pox. By William Woodville, M. D., Physician to the Small-pox and Inoculation Hospitals, octavo, 43 pages; Phillips, London, 1800.

Copy of a Testimonial in favor of the Vaccine Inoculation, signed by thirty-six Physicians and Surgeons in London. London Medical Review and Magazine, vol. 4, July to December, 1800, p. 60.

Further information respecting the case of Cow-pox which was lately communicated by Mr. Malim, with observations by the Editor. London Medical Review and Magazine, vol. 4, 1800, p. 208.

Additional Observations on the Variform Eruptions which have occurred in the Cow-pox, with some further remarks on the origin of the disease. By Mr. Ring, Member of the Royal College of Surgeons in London. London Medical Review and Magazine, July to October, 1800, vol. 4, p. 91.

On the Introduction of the Vaccine Inoculation at Paris (A. Monsieur Pearson, Médecin de l'Hôpital de l'Inoculation Vaccine à Londres). London Medical Review and Magazine, vol. 4, p. 204.

Further Remarks on Variolated Vaccine Matter, and on Mr. Malim's case of Cow-pox. By Mr. Ring, Member of the Royal College of Surgeons in London. London Medical Review and Magazine, vol. 4, p. 307.

Facts relating to the origin of the Cow-pox, communicated by Sir Christopher Pegge, Knight, M. D., and Reader of Anatomy, Oxford. London Medical Review and Magazine, November, 1800, to February, 1801, vol. 5, p. 76.

Authentic information relative to some extraordinary cases of the Cow-pox at Clapham. By Mr. Pears, F. M. S., etc.; with a postscript by the Editors. London Medical Review and Magazine, vol. 5, p 276.

Facts concerning the Eruptions and Contagious Nature of the Cow-pox. By Mr. Harrup, of Cholsham. London Medical Review and Magazine, vol. 5, p. 289.

Rapport sur la Vaccine; ou Réponse aux Questions Rédigées par les Commissaires de l'Ecole de Medecine de Paris, sur la Pratique et les Résultats de cête Nouvelle Inoculation en Angleterre, et dans les Hospices des Londres, ou on l'Adopté. Par A Aubert, Docteur en Médecine; Paris. An 9.

Copy of a letter on the Cow-pox, from Dr. Marshall to Mr. Ring, dated Gibralter, August 23, 1800. London Medical Review and Magazine, vol. 5, p. 100.

A Concise View of Circumstances and Proceedings respecting Vaccine Inoculation, etc., etc. London, 1800.

A concise view of all the most important facts which have hitherto appeared concerning the Cow-pox. By C. R. Aikin, Member of the Royal College of Surgeons in London; Phillips, London, 1800.

A comparative statement of Facts and Observations relative to the Cow-pox; published by Drs. Jenner and Woodville, London, 1800.

Copy of a letter from Dr. Marshall to Mr. Ring, dated Mahon, Island of Minorca, September, 1800. London Medical Review and Magazine, vol. 5, p. 198.

Copy of a letter from Dr. Marshall to Mr. Ring, dated H. M. S. Fondrazars, Gibraltar Bay, October 16, 1800. London Medical Review and Magazine, vol. 5, p. 199.

Additional Signatures to the Testimonial in favor of Vaccine Inoculation. London Medical Review and Magazine, vol. 5, p 315.

That the labors of Dr. Jenner were recognized by the wisest and most ble representatives of his own country, within ten years after the an- nouncement of his discovery, is shown by the following report of the Royal College of Physicians of London, on vaccination in 1807.

This report, with the accompanying opinions of the Royal College of Physicians of Edinburgh and Dublin, and of the Royal College of Sur- geons of London, of Dublin and of Edinburgh, made in accordance with n address from the House of Commons and in compliance with the com- nands of the King of England, should be regarded as one of the ablest nd most impartial of the testimonials which have at different times and n different countries been received in favor of vaccination.

EPORT OF THE ROYAL COLLEGE OF PHYSICIANS OF LON- DON, ON VACCINATION. WITH AN APPENDIX, CONTAIN- ING THE OPINIONS OF THE ROYAL COLLEGE OF PHYSI- CIANS OF EDINBURGH AND DUBLIN; AND OF THE ROYAL COLLEGES OF SURGEONS OF LONDON, OF DUBLIN, AND OF EDINBURGH.

The Royal College of Physicians of London, having received his Majesty's commands, compliance with an address from the House of Commons, "to inquire into the state of ccine inoculation in the United Kingdom, to report their opinion and observations up- that practice, upon the evidence which has been adduced in its support, and upon e causes which have hitherto retarded its general adoption;" have applied themselves igently to the business referred to them.

Deeply impressed with the importance of an inquiry which equally involves the lives individuals and the public prosperity, they have made every exertion to investigate e subject fully and impartially. In aid of the knowledge and experience of the mem- rs of their own body, they have applied separately to each of the Licentiates of the lege; they have corresponded with the Colleges of Physicians of Dublin and Edin- rgh; with the Colleges of Surgeons of London Edinburgh and Dublin; they have led upon the societies established for vaccination, for an account of their practice, to at extent it has been carried on, and what has been the result of their experience; l they have, by public notice, invited individuals to contribute whatever information y had severally collected. They have in consequence been furnished with a mass of dence communicated with the greatest readiness and candor, which enables them to ak with confidence upon all the principal points referred to them.

During eight years which have elapsed since Dr. Jenner made his discovery public progress of vaccination has been rapid, not only in all parts of the United Kingdom, in every quarter of the civilized world. In the British Islands some hundred thous- ds have been vaccinated; in our possession in the East Indies upwards of 800,000, and ong the nations of Europe the practice has become general. Professional men have mitted it to the fairest trials, and the public have, for the most part, received it with- prejudice. A few indeed have stood forth the adversaries of vaccination, on the same

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ne Report of the Cow-pock Inoculation from the Practice at the Vaccine Pock Institution, during the s 1800, 1801 and 1802. Read at the General Meeting of the Governors February 7, 1803, at the Shaks- e Tavern; written by the Physicians to the Institution; to which are prefixed two painted engravings ow-pox and other Eruptions. London, 1803.

ird Annual Report of the Vaccine Pock Institution for Inoculating the Poor, Supported by the Vol- ry Subscriptions, Benefactions and legacies of the Public; From its Foundation, December 2, 1800, to ember 31, 1802.

case showing the impropriety of taking the whole of the virus out of a vaccine vesicle; communicated r. Frederick Dalcho, Secretary to the Medical Society of South Carolina, to Dr. Michell, April 27, 1805. Medical Repository, etc., vol 3, p. 204.

e cases reported by Dr. Frederick Dalcho, occurred in May, 1802.

Remarks on the Cow-pox Inoculation, by Mr. Charles Brandon Frye."

om his own experience Mr. Frye asserted, *first*, that whatever *has been said against the sufficiency* of *pox* matter, as a security against variolous infection, may be also *said with truth against Small-pox mat-* s a similar security; *second*, that the subsequent ill effects which *have been said* to follow Cow-pox, in a ten-fold degree, followed Small pox; *third*, that many instances of mortality have happened in l-pox inoculation, while amongst *all which has* been said, not a single example appears of death from pox.

grounds as their predecessors who opposed the inoculation for the small-pox, falsely led by hypothetical reasoning in the investigation of a subject which must be supported, or rejected, upon facts and observation only. With these few exceptions, the testimony in favor of vaccination has been most strong and satisfactory, and the practice of it, though it has received a check in some quarters, appears still to be upon the increase in most ports of the United Kingdom.

II. The College of Physicians, in giving their observations and opinions on the practice of vaccination, think it right to premise, that they advance nothing but what is supported by the multiplied and unequivocal evidence which has been brought before them, and they have not considered any facts as proved, but what have been stated from actual observation.

Vaccination appears to be in general perfectly safe; the instances to the contrary being extremely rare. The disease excited by it is slight, seldom preventing those under it from following their ordinary occupations. It has been communicated with safety to pregnant women, to children during dentition, and in their earliest infancy; in all which respects it possesses material advantages over inoculation for the small-pox; which, though productive of a disease generally mild, yet sometimes occasion alarming symptoms, and is in a few cases fatal.

The security derived from vaccination against the small-pox, if not absolutely perfect is as nearly so as can perhaps be expected from any human discovery; for amonst several hundred thousand cases, with the results which the College have been made aequainted, the number of alleged failures have been surprisingly small, so much so, as to form certainly no reasonable objection to the general adoption of vaccination, for it appears that there is not nearly so many failures in a given number of vaccinated persons, as there are deaths in an equal number of persons inoculated for the small-pox. Nothing can more cleary demonstrate the superiority of vaccination over the inoculation of the small-pox, than this consideration; and it is a most important fact, which has been confirmed in the course of this inquiry, that in almost every case where the small-pox has succeeded vaccination, whether by inoculation or by casual infection, the disease has varied much from its ordinary course; it has neither been the same in violence, nor in the duration of its symptoms, but has, with very few exceptions been remarkably mild, as if the small-pox had been deprived, by the previous vaccine disease, of all its usual malignity.

The testimonies before the College of Physicians are very decided in declaring, that vaccination does less mischief to the constitution and less frequently gives rise to other diseases, than small-pox, either natural or inoculated.

The College feel themselves called upon to state this strongly, because it has been objected to vaccination, that it produces new, unheard-of, and monstrous diseases. Of such assertions no proofs have been produced, and, after diligent inquiry, the College believe them to have been either the inventions of designing, or the mistakes of ignorant men. In these respects then, in its mildness, its safety, and its consequences, the individual may look for the peculiar advantages of vaccination. The benefits which flow from it to society are infinitely more considerable; it spreads no infection, and can be communicated only by inoculation. It is from a consideration of the pernicious effects of the small-pox, that the real value of vaccination is to be estimated. The natural small-pox has been supposed to destroy a sixth part of all whom it attacks; and that even by inoculation, where that has been general in parishes and towns, about one in 300 has usually died. It is not sufficiently known, or not adverted to, that nearly one tenth, some years more than one-tenth of the whole mortality in London, is occasioned by the small-pox; and however beneficial the inoculation of the small-pox may have been to individuals, it appears to have kept up a constant source of contagion, which has been the means of increasing the number of deaths by what is called the natural disease. It cannot be doubted that this mischief has been extended by the inconsiderate manner in which great numbers of persons, even since the introduction of vaccination, are still every year inoculated with the small-pox, and afterwards required to attend two or three times a week at the places of inoculation, through every stage of their illness.

From this, then, the public are to expect the great and uncontroverted superiority of vaccination, that it communicates no casual infection, and, while it is a protection to the individual, it is not prejudicial to the public.

III. The College of Physicians, in reporting their observations and opinions on the evidence adduced in support of vaccination, feel themselves authorized to state that a body of evidence so large, so temperate, and so consistent, was perhaps never before collected upon any medical question. A discovery so novel, and to which there was nothing analogous known in nature, though resting on the experimental observations of the inventor, was at first received with diffidence; it was not, however, difficult for others to repeat his experiments, by which the truth of his observations was confirmed, and the doubts of the cautious were gradually dispelled by extensive experience. At the commencement of the practice, almost all that were vaccinated were afterwards submitted to

ne inoculation of the small-pox, many underwent this operation a second, and even a
iird time, and the uniform success of these trials quickly bred confidence in the new
iscovery. But the evidence of the security derived from vaccination against the small-
ox does not rest alone upon those who afterwards underwent variolous inoculation, al-
nough amounting to many thousands; for it appears, from numerous observations com-
unicated to the College, that those who have been vaccinated are equally secure against
ne small-pox does not rest alone upon those who afterwards underwent variolous inocu-
tion, although amounting to many thousands; for it appears, from numerous observa-
ons communicated to the College, that those who have been vaccinated are equally se-
ure against the contagion of epidemic small-pox. Towns, indeed, and districts of the
ountry, in which vaccination had been general, have afterwards had the small-pox
revalent on all sides of them without suffering from the contagion. There are also in
ne evidence a few examples of epidemic small-pox having been subdued by a general
accination. It will not, therefore, appear extraordinary that many who have commu-
cated their observations should state, that though at first they thought unfavorably of
.e practice, experience had now removed all their doubts.

It has been already mentioned that the evidence is not universally favorable, although
is in truth nearly so, for there are a few who entertain sentiments differing widely
om those of the great majority of their brethren. The College, therefore, deemed it
eir duty, in a particular manner, to inquire upon what grounds and evidence the op-
sers of vaccination rested their opinions. From personal examination, as well as from
eir writings, they endeavored to learn the full extent and weight of their objections.
ney found them without experience in vaccination, supporting their opinions by hear-
y information and hypothetical reasoning; and, upon investigating the facts which
ey advanced, they found them to be either misapprehended or misrepresented, or that
ey fell under the description of cases of imperfect small-pox before noticed, and which
e College have endeavored fairly to appreciate.

The practice of vaccination is but of eight years standing, and its promoters, as well
opponents, must keep in mind that a period so short is too limited to ascertain every
int, or to bring the art to that perfection of which it may be capable. The truth of
is will readily be admitted by those acquainted with the history of inoculation for the
all-pox. Vaccination is now, however, well understood, and its character accurately
scribed. Some deviations from the usual course have occasionally occurred, which the
thor of the practice has called spurious cow-pox, by which the public have been
sled, as if there were a true and false cow-pox; but it appears that nothing more was
ant than to express irregularity or difference from that common form and progress of
e vaccine pustule from which its efficacy is inferred. Those who perform vaccination
ght, therefore, to be well instructed, and should have watched with the greatest care
e regular progress of the pustule, and learnt the most proper time for taking the mat-
. There is little doubt that some of the failures are to be imputed to the inexperience
the early vaccinators, and it is not unreasonable to expect that further observations
ll yet suggest many improvements that will reduce the number of anamalous cases,
l furnishing the means of determining with greater precision, when the vaccine dis-
se has been effectually received.

Though the College of Physicians have confined themselves in estimating the evidence
such facts as have occurred in their own country, because the accuracy of them could
t be ascertained, they cannot be insensible to the confirmation these receive from the
orts of the successful introduction of vaccination, not only into every part of Europe,
t throughout the vast continents of Asia and America.

V. Several causes have had a partial operation in retarding the general adoption of
ccination; some writers have greatly underrated the security it affords, while others
ve considered it to be of a temporary nature only; but if any reliance is to be placed
the statements which have been laid before the College, its power of protecting the
man body from the small-pox, though not perfect indeed, is abundantly sufficient to
ommend it to the prudent and dispassionate, especially as the small-pox, in the few
tances where it has subsequently occurred, has been generally mild and transient.
e opinion that vaccination affords but a temporary security is supported by no anology
nature, nor by the facts which have hitherto occurred. Although the experience of
ccine inoculation be only of a few years, yet the same disease, contracted by the
lkers of cows, in some districts, has been long enough known to ascertain that in them,
least, the unsusceptible of the cow-pox contagion does not wear out of time. Another
se is the charge against vaccination of producing various new diseases of frightful
monstrous appearance.

epresentations of some of these have been exhibited in print in a way to alarm the
ings of parents, and to infuse dread and apprehension into the minds of the unin-
ned. Publications with such representations have been widely circulated, and
ugh they originate either in gross ignorance, or willful misrepresentation, yet have
y lessened the confidence of many, particularly of the lower classes, in vaccination;

no permanent effects, however, in retarding the progress of vaccination need be apprehended from such causes, for, as soon as the public shall view them coolly and without surprise, they will excite contempt, and not fear.

Though the College of Physicians are of opinion that the progress of vaccination has been retarded in a few places by the above causes, yet they conceive that its general adoption has been prevented by causes far more powerful, and of a nature wholly different. The lower orders of society can hardly be induced to adopt precautions against evils which may be at a distance; nor can it be expected from them, if these precautions are attended with expense. Unless, therefore, from the immediate dread of epidemic small-pox, neither vaccination nor inoculation appear at any time to have been general, and when the cause of terror has passed by, the public have relapsed again into a state of indifference and apathy, and the salutary practice has come to a stand. It is not easy to suggest a remedy for an evil so deeply imprinted in human nature. To inform and instruct the public mind may do much, and it will probably be found that the progress of vaccination in different parts of the United Kingdom will be in proportion to that instruction. Were encouragement given to vaccination, by offering it to the poorer classes without expense, there is little doubt that it would in time supersede the inoculation for the small-pox, and thereby various sources of variolous infection would be cut off; but till vaccination becomes general, it will be impossible to prevent the constant recurrence of the natural small-pox by the means of those who are inoculated, except it should appear proper to the legislature to adopt, in its wisdom, some measure by which those who still, from terror or prejudice, prefer the small-pox to the vaccine disease, may, in thus consulting the gratification of their own feelings, be prevented from doing mischief to their neighbors.

From the whole of the above considerations, the College of Physicians feel it their duty strongly to recommend the practice of vaccination. They have been led to this conclusion by no preconceived opinion, but by the most unbiased judgment, formed from an irresistable weight of evidence, which has been laid before them. For when the number, the respectability, the disinterestedness and the extensive experience of its advocates is compared with the feeble and imperfect testimonies of its few opposers; and when it is considered that many, who were once adverse to vaccination, have been convinced by further trials, and are now to be ranked among its warmest supporters, the truth seems to be established as firmly as the nature of such a question admits; so that the College of Physicians conceive that the public may reasonably look forward with some degree of hope to the time when all opposition shall cease, and the general concurrence of mankind shall at length be able to put an end to the ravages, at least, if not to the existence, of small-pox. LUCAS PEPYS, President.

Royal College of Physicians, April 10, 1807.

JA. HARVEY, Register.

APPENDIX.

NO. 1.

To the Royal College of Physicians of London:

Gentlemen—I am ordered by the King and Queen's College of Physicians, in Ireland, to thank the Royal College of Physicians, of London, for the communication they have had the honor to receive from them, of certain propositions relative to vaccination whereon His Majesty has been pleased to direct an inquiry to be instituted, and in the prosecution of which the co-operation of the College in Ireland is requested.

And I am directed to acquaint you that the said College having referred the investigation of these propositions to a committee, have received from them a report, of which the inclosed is a copy; and that they desire the same may be considered as containing their opinion upon the subject. I have the honor to be, gentlemen,

Your most obedient humble servant,

HUGH FERGUSON, Register.

By order of the King and Queen's College of Physicians in Ireland.

Dublin, Nov. 11, 1806.

"The practice of vaccination was introduced in this city about the beginning of the year 1801, and appears to have made inconsiderable progress at first. A variety of causes operated to retard its general adoption, amongst which the novelty of the practice, and the extraordinary effects attributed to vaccination, would naturally take the lead.

"Variolous inoculation had been long, almost exclusively, in the hands of a particular anch of the profession, whose prejudices and interests were strongly opposed to the w practice; and by their being the usual medical attendants in families, and especlly employed in the diseases of children, their opinions had greater effect upon the nds of parents. The small-pox is rendered a much less formidable disease in this untry by the frequency of inoculation for it, than it is in other parts of His Majesty's minions, where prejudices against inoculation have prevailed; hence, parents, not unturally, objected to the introduction of a new disease, rather than not recur to that, th the mildness and safety of which they were well acquainted.

'In the beginning of the year 1804, the Cow-Pox Institution was established, under e patronage of the Earl of Hardwicke, and it is from this period that we may date the neral introduction of vaccination into this city, and throughout all parts of Ireland.

'The success of the institution, in forwarding the new practice, is to be attributed in reat measure to the respectability of the gentlemen who superintend it, and to the ligence, zeal and attention of Dr. Labatt, their secretary and inoculator. In order to ow the progress which has been made in extending the vaccination, your committee er to the report of the Cow-Pox Institution for the last two years, and to extracts m their Register for the present year:

YEAR.	Patients Inoculated.	Packets Issued to Practitioners in General.	Packets to Army Surgeons.
4	578	776	236
5	1032	1124	178
6	1356	1340	220
Total	2966	3240	634

In the above statement the numbers are averaged to the end of the present year, on supposition of patients resorting to the institution as usual. The correspondence of institution appears to be very general throughout every part of Ireland, and by acnts received, as well from medical practitioners as others, the success of vaccination ns to be uniform and effectual. At the present period, in the opinion of your comtee, there are few individuals in any branch of the profession who oppose the pracof vaccination in this part of His Majesty's dominions.

It is the opinion of your committee that the practice of cow-pox inoculation is safe, that it fully answers all the purposes that have been intended by its introduction. he same time, your committee is willing to allow that doubtful cases have been reed to them as having occurred, of persons suffering from small-pox, who had been iously vaccinated. Upon minute investigation, however, it has been found that e supposed instances originated generally in error, misrepresentation, or the difficulty iscriminating between small-pox and other eruptions, no case having come to the wledge of your committee, duly authenticated by respectable and competent judges, genuine small-pox succeeding the regular vaccine disease.

The practice of vaccination becomes every day more extended; and, when it is conred that the period at which it came into general use in Ireland is to be reckoned so late a date, your committee is of opinion that it has made as rapid a progress as d be expected.

[Signed] "JAMES CLEGHORN,
"DANIEL MILLS,
"HUGH FERGUSON."

NO. II.

PHYSICIAN'S HALL, EDINBURGH, November 26, 1807.

ntlemen—The Royal College of Physicians of Edinburgh have but little opportunity selves of making observations of vaccination, as that practice is entirely conducted rgeon apothecaries and other medical practitioners out of this College, and as the s produced by it are so inconsiderable and slight that the aid of a physician is never red.

e College know that in Edinburgh it is universally approved by the profession, and e higher and middle ranks of the community, and that it has been much more gen- adopted by the lower orders of the people than even the inoculation of small-pox and they believe the same to obtain all over Scotland.

th regard to any causes which have hitherto prevented its general adoption, they equainted with none, except the negligence or ignorance of parents among the comeople, or their mistaken ideas of the impropriety or criminality of being accessory e production of any disease among their children, or the difficulty or impossibility, me of our country districts, of producing vaccine matter, or a proper person to vac-

The evidence in favor of vaccination appeared to the Royal College of Physicians of Edinburgh so strong and decisive that in May last they spontaneously and unanimously elected Dr. Jenner an Honorary Fellow of their College—a mark of distinction which they rarely confer, and which they confine almost exclusively to foreign physicians of the first eminence.

They did this with a view to publish their opinion with regard to vaccination, and in testimony of their conviction of the immense benefits which have been, and which will in future be derived to the world, from inoculation for the cow-pox, and as a mark of their sense of Dr. Jenner's very great merits and ability in introducing and promoting this invaluable practice.

I have the honor to be, gentlemen, your most obedient humble servant,

TH. SPENS, C. R. M. Ed. Pr.

To the Royal College of Physicians of London.

NO. III.

At a Special Court of Assistants of the Royal College of Surgeons, convened by order of the Master, and holden at the College on the seventeenth day of March, 1807; Mr Governor Lucas in the chair; Mr. Long, as Chairman of the Board of Curators, reported: That the Board are now ready to deliver their report on the subject of vaccination.

It was then moved, seconded, and resolved, that a report from the Board of Curators on the subject of vaccination, which was referred to their consideration by the Court of Assistants, on the twenty-first day of November last, be received.

Mr. Long then delivered to Mr. Governor Lucas (presiding in the absence of the Master) a report from the Board of Curators.

It was then moved, seconded, and resolved, that the report delivered by Mr. Long be read; and it was read accordingly, as follows:

TO THE COURT OF ASSISTANTS OF THE ROYAL COLLEGE OF SURGEONS IN LONDON:

The Report of the Board of Curators, on the subject of Vaccination, referred to them by the Court, on the twenty-first day of November, 1806; made to the Court on the seventeenth of March, 1807.

The Court of Assistants having received a letter from the Royal College of Physicians of London, addressed to this College, stating, that His Majesty had been graciously pleased, in compliance with an address from the Honorable House of Commons, to direct his Royal College of Physicians of London to inquire into the state of vaccination in the United Kingdom, to report their observations and opinion upon that practice, upon the evidence adduced in its support, and upon the causes which have hitherto retarded its general adoption; that the college was then engaged in the investigation of the several propositions thus referred to them, and requesting the college to co-operate and communicate with them, in order that the report thereupon might be made as complete as possible.

And having, on the twenty-first day of November last, referred such letter to the consideration of the Board of Curators, with authority to take such steps respecting the contents thereof as they should judge proper, and report their proceedings thereon, from time to time, to the Court; the Board proceeded with all possible dispatch to the consideration of the subject.

The Board being of the opinion that it would be proper to address circulars to members of the College, with a view of collecting evidence, they submitted to the consideration of the Court, holden on the fifteenth day of December last, the drafts of such letters as appeared to them best calculated to answer that end; and the same having been approved by the Court, they caused copies thereof to be sent to all the members of the College, in the United Kingdom, whose residence could be ascertained, in the following form, viz:

"*Sir*—The Royal College of Surgeons being desirous to co-operate with the Royal College of Physicians of London, in obtaining information respecting vaccination, submit to you the following questions, to which the favor of your answer is requested.

"By order of the Court of Assistants. OKEY BELFOUR, Secretary.

"Lincoln's Inn Fields, December 15, 1806.

"QUESTIONS.

"*First*—How many persons have you vaccinated?

"*Second*—Have any of your patients had the small-pox after vaccination? In case of every such occurrence, at what period was the vaccine matter taken from the vesicle? How was it preserved? How long before it was inserted? What was the

arance of the inflammation? And what the interval between vaccination and vario-
us eruption?

"*Third*—Have any bad effects occurred in your experience in consequence of vaccina-
on? And, if so, what were they?

"*Fourth*—Is the practice of vaccination increasing or decreasing in your neighbor-
ood; if decreasing, to what cause do you impute it?

To such letters the Board have received 426 answers; and the following are the results their investigation:

The number of persons, stated in such letters to have been vaccinated, is 164,381.

The number of cases in which small-pox had followed vaccination is fifty-six.

The Board thinks it proper to remark, under this head, that in the enumeration of ses in which small-pox has succeeded vaccination, they have included none but those which the subject was vaccinated by the surgeon reporting the facts.

The bad consequences which have arisen from vaccination are, eruptions of the skin in ty-six cases, and inflammation of the arm in twenty-four instances, of which three oved fatal.

Vaccination, in the greater number of counties from which reports have been received, pears to be increasing; it may be proper, however, to remark, that, in the metropolis, s on the decrease.

The principal reasons assigned for decrease are: Imperfect vaccination; instances of all-pox after vaccination; supposed bad consequences; publications against the prac-e; popular prejudices.

And such report having been considered, it was moved, seconded, and resolved, that report now read be adopted by this Court as the answer of the Court to the letter of Royal College of Physicians, of the twenty-third of October last, on the subject of cination.

Resolved, That a copy of these minutes and resolutions, signed by Mr. Governor Lucas esiding at this Court in the absence of the Master), be transmitted by the Secretary he Register of the Royal College of Physicians. [Signed] WM. LUCAS.

NO. IV.

EDINBURGH, March 3, 1807.

Sir—I mentioned in my former letter that I would take the earliest opportunity of lay-before the Royal College of Surgeons of Edinburgh the communication with which Royal College of Physicians of London had honored them, on the twenty-third of ober last.

am now directed by the Royal College to send the following answer on that import-subject:

he practice of vaccine inoculation, both in private and at the Vaccine Institution, ablished here in 1801, is increasing so rapidly that for two or three years past the ll-pox has been reckoned rather a rare occurrence, even amongst the lower order of inhabitants of this city, unless in some particular quarters, about twelve months ; and, among the higher ranks of the inhabitants, the disease is unknown.

he members of the Royal College of Surgeons have much pleasure in reporting, t, as far as their experience goes, they have no doubt of the permanent security inst the small-pox which is produced by the constitutional affection of the cow-pox: that such has hitherto been their success in vaccination, as also to gain for it the idence of the public, insomuch that they have not been required, for some years , to inoculate any person with small-pox who had not previously undergone the in-ation with the cow-pox.

he members of the Royal College have met with no occurrence in their practice of -pox inoculation which could operate in their minds to its disadvantage, and they leave particularly to notice that they have seen no instance of obstinate eruptions, f new and dangerous diseases, which they could attribute to the introduction among kind of this mild preventive of the small-pox. The Royal College of Surgeons w of no causes which have hitherto retarded the adoption of vaccine inoculation ; on the contrary, the practice has become general within this city; and from many sand packets of vaccine matter having been sent by the members of the Royal Col-, and the Vaccine Institution here, to all parts of the country, the Royal College reason to believe that the practice has been as generally adopted throughout this of the United Kingdom as could have been expected from proper medical assistance, other circumstances of that nature.

I have the honor to be, Sir, your obedient servant,

WM. FARQUHARSON,

President of the Royal College and Incorporation of Surgeons of Edinburgh.

NO. V.

ROYAL COLLEGE OF SURGEONS IN IRELAND,
DUBLIN, FEBRUARY 4, 1807.

Sir—I am directed to transmit to you the enclosed report of a committee of the College of Surgeons in Ireland, to whom was referred a letter from the Royal College of Physicians in London, relative to the present state of vaccination in this part of the United Kingdom; and to state, that the College of Surgeons will be highly gratified by more frequent opportunities of corresponding with the English College of Physicians on any subject which may conduce to the advancement of science and the welfare of the public.

I have the honor to be, Sir, your most obedient humble servant,
JAMES HENTHORN, Secretary.

At a meeting of the Royal College of Surgeons in Ireland, holden at their Theatre, on Tuesday, the thirteenth day of January, 1807; Francis M'Evoy, Esq., President; Mr. Johnson reported from the committee, to whom was referred a letter from the College of Physicians, London, relative to the present state of vaccination in the United Kingdom, etc.; that they met and came to the following resolutions:]

That it appears to this committee, That inoculation with vaccine infection is now very generally adopted by the surgical practitioners in this part of the Kingdom as a preventive for small-pox.

That it appears to this committee, That from the twenty-fifth day of March, 1800, to the twenty-fifth of November, 1806, 11,504 persons have been inoculated with vaccine infection at the dispensary for infant poor, and 2,831 at the cow-pox institution, making a total of 14,335, exclusive of the number inoculated at hospitals and other places, where no registry is made and preserved.

That it is the opinion of the committee, That the cow-pox has been found to be a mild disease, and rarely attended with danger, or any alarming symptom, and that the few cases of small-pox which have occurred in this country, after supposed vaccination, have been satisfactorily proved to have arisen from accidental circumstances, and cannot be attributed to the want of efficacy in the genuine vaccine infection as a preventive of small-pox.

That it is the opinion of this committee, that the causes which have hitherto retarded the more general adoption of vaccination in Ireland, have, in a great measure, proceeded from the prejudices of the lower classes of the people, and the interest of some irregular practitioners.

To which report the College agrees.*

[Extract from the Minutes]
JAMES HENTHORN, Secretary.

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*In addition to the above highly satisfactory document, it may be proper to state, that the English House of Commons have just voted £20,000 additional to Dr. Jenner, as the discoverer of vaccination.

HE OCCASIONAL OCCURRENCE OF SMALL-POX AND MODIFIED SMALL-POX (VARIOLOID), AFTER VACCINATION EXCITED IN THE MINDS OF SOME DISTRUST AS TO THE PROTECTIVE POWER OF COW-POX INOCULATION, AND LEAD TO CAREFUL INVESTIGATION ON THE PART OF THE ADVOCATES OF VACCINATION. THE YEAR 1804 FORMED AN ERA IN THE HISTORY OF VARIOLÆ VACCINÆ. DR. JENNER REFERRED THE REPUTED FAILURES OF VACCINATION TO SEVERAL CAUSES, AS: IGNORANCE AND CARELESSNESS ON THE PART OF MANY INOCULATORS, WHO FAILED TO DISCRIMINATE WITH DUE ACCURACY BETWEEN THE PERFECT AND IMPERFECT PUSTULE; SUCH MODIFICATION OF THE VACCINE PUSTULE DURING ITS PROGRESS AS TO DEPRIVE IT OF ITS EFFICACY; THE POWER OF THE HERPETIC AND OTHER IRRITABLE ERUPTIONS TO RENDER THE VARIOLOUS AS WELL AS THE VACCINE INOCULATION IMPERFECT.

The year 1804 formed an era in the history of variolæ vaccinæ, for at s time the reports of failures in vaccination had begun to multiply, and fears of some of its supporters had been thereby excited to an immodte degree. Whilst Jenner deplored the ignorance that gave occasion to h rumors, he felt no anxiety concerning his great and fundamental posit n. Writing to Lord Berkeley on this subject, he said: "I expect that es of this kind will flow in upon me in no inconsiderable number; and this plain reason—a great number, perhaps—the majority of those who culate are not sufficiently acquainted with the nature of the disease to ble them to discriminate with due accuracy between the perfect and imfect pustule. This is a lesson not difficult to learn, but unless it is ned, to inoculate the cow-pox is folly and presumption."
o another correspondent he said.

"What I have *said on this vaccine subject is true. If properly conducted, it secures the con*ion *as much as variolous inoculation possibly can. It is the small-pox in a purer form* that *which has been current among us for twelve centuries past.*"

r. Goldson, of Portsea, actuated by prejudice, joined Dr. Moseley in his ectural arguments against vaccination. In 1804 the assertion was made the cow-pox afforded only a temporary security. Had it been correct, ould have deprived the discovery of Dr. Jenner of nearly all its value. assertion was very easily made, and in the infancy of the practice, d not be well disproved. To these circumstances it was owing that the e and unsupported statements of Mr. Goldson acquired any influence. Jenner himself, from the commencement, perceived that in his cases of re, cow-pox had never properly taken place.

e real merits of the question were also detected by Mr. Dunning, of the first British surgeons who stood forward to recommend vaccina- soon after the practice was promulgated, and to the day of his death ld the accuracy and justness of Jenner's views. His little tract, pubd about this time, under the title of "A Short Detail of Some Circumes Connected with Vaccine Inoculation," etc., contains some of the dest opinions with regard to the nature of variolæ and variolœ vac-

cinæ that have ever appeared. It was by studying small-pox that he became thoroughly acquainted both with the benefits conferred by vaccination and those principles that ought to direct the practice.

Some of the points which are even at the present time matters of discussion, were fully explained at this early period of vaccination. It was then clearly ascertained, that there were deviations from the usual course of small-pox, which was quite as common, and infinitely more disastrous, than those which took place in vaccination. These deviations regarded two apparently different states of the constitution. In the one, the susceptibility of small-pox was not taken away by previous infection; while on the other hand, some constitutions seem to be unsusceptible of small pox infection altogether. It was found, that similar occurrences took place in the practice of vaccination; but as the security which the latter afforded was more likely to be interfered with by slight cases than the former, it became absolutely necessary that good care should be shown in watching the progress and character of the pustule.

Dr. Jenner had from the beginning felt the propriety of this watchfulness; and had distinctly announced that it was possible to propagate an affection by inoculation conveying different degrees of security, according as that affection approached to, or receded from, the full and perfect standard. He also clearly stated, that the course of the vaccine pustules might be so modified as to deprive it of its efficacy; that inoculation from such a source might communicate an inefficient protection, and that all who were thus vaccinated were more or less liable to subsequent small-pox. His directions for obviating occurrences of this kind regarded, *first*, the character of the pustule itself, the time and quality of the lymph taken for inoculation, and all other circumstances that might go to affect the completed progress of the disorder. He attached great importance to this last point; and in the course of 1804 published a tract "On the Varieties and Modifications of the Vaccine Pustule, Occasioned by an Herpetic State of the Skin."

The following sentence in the introduction is worthy of note:

"I shall here just observe, that the most ample testimonies now lie before me, supporting my opinion that the herpetic, and some other irritive eruptions, are capable of rendering variolous inoculation imperfect, as well as the vaccine."

Besides the instructions which Dr. Jenner himself had published, for the purpose of securing perfection in the vaccine process, Mr. Dunning has the merit of establishing a canon, namely, that one pustule *at least* should remain undisturbed. Dr. Jenner candidly admitted the propriety of the rule of Mr. Dunning.

In a letter to Dr. Willan, dated February 23, 1806, Dr. Jenner says:

"It strikes me that the constitution loses its susceptibility of small-pox contagion, in the capability of producing the disease in its ordinary state, in proportion to the degree of perfection which the vaccine vesicle has put on in its progress; and that the small-pox, if taken subsequently, is modified accordingly; this opinion was first published by Mr. Dunning of Plymouth."

In a letter to his friend Mr. Dunning, dated Berkeley, December 23, 18[illegible], Dr. Jenner thus alludes to the work of Goldson:

"You speak of Ring, and Goldson. Recollect then was the time to be cool. When came of vaccination—what man well acquainted with its nature, or that of the small-pox could read Goldson's book, and lay it down cooly? Ring, the moment he read it, that, indeed, which was infinitely worse than the book itself, the murderous harbinger the advertisement, instantly charged his blunderbuss, and fired in the face of the author. I must freely confess, I do not feel so cooly about Mr. Goldson as you do. His book sent many a victim to a promature grave; and would have sent many more, but for humanity and zeal of yourself and others who stepped forward to counteract its dr[illegible]

ful tendancy. Had Goldson but written to me, stating those occurances in his practice which appeared extraordinary, I should with the greatest pleasure have told him where the mistake lay; and made him a good vaccinest. * * *

"But to return. There may be peculiarities of constitution favorable to this phenomenon. My opinion still is, that the grand interference is from the agency of this herpes, in some form or other; for I have discovered that it is a very Proteus, assuming as it thinks fit, the character of the greater part of the irritative eruptions that assail us. I shall have much to say on this disease one of these days."

"The security given to the constitution by vaccine inoculation, is exactly equal to that given by the variolous. As failures in the latter are constantly presenting themselves, nearly from its commencement to the present time, we must expect to find them in the former also. In my opinion, in either case, they occur from the same causes; one might name for example, among others, some peculiarities of constitution which prevent the virus from acting properly, even when properly applied; from inattention or want of true knowledge in not being able to discriminate between the correct and incorrect pustule." * * *

"Wonderful as it is, yet there are abundant facts to prove, that the insertion of variolous matter into the skin has produced a virus fit for the purpose of continuing the inoculation; and yet the person who has borne it, and on whose skin it was generated, has subsequently been infected with the small-pox, on exposure to its influence. Just so with the vaccine."

"Vaccine inoculation has certainly unveiled many of the mysterious facts attendant upon the small-pox and its inoculation. How often have we seen (apparently) the full effects of the arm from the insertion of variolous matter, indisposition and even eruptions following it, and its termination in an extensive and deep cicatrix; and yet, on exposure, the person who underwent this, has caught the small-pox."

In one of his journals, Dr. Jenner has left the following notes upon the same subject:

"The origin of the small-pox is the same as that of the cow-pox; and as the *latter* was probably coeval with the brute creation, the former was only a variety springing from it."

"There are certainly more forms than one (without considering the common variation between the confluent and distinct) in which the small-pox appears in what is called the natural way."

"It will be inquired (if the foregoing reasoning be *a priori* correct) in which way can the action of cow-pox (or the equine pock) in preventing subsequently small-pox be reconcilable with the established laws of the animal economy? My reply is, for the reasons which I have stated on the basis of facts, that they were not *bona fide dissimilar* in their nature; but, on the contrary, *identical*. On this ground I gave my first book of 'An Inquiry into the Causes and Effects of the *Variolæ Vaccinæ*'—a circumstance which has since been regarded by many as the happy foresight of a connection which was defined by further evidence to become more warranted."—*The Life of Edward Jenner, M. D., LL. D., F. R. S., Etc., by John Baron, M. D., F. R. S., vol. 2, pp.* 12-31.

THE EPIDEMIC SMALL-POX OF 1818—THE PREVALENCE OF SMALL-POX IN GREAT BRITAIN AND ON THE CONTINENT DEVELOPED INCREASED HOSTILITY TO THE PRACTICE OF VACCINATION—DR. JENNER BELIEVED IMPERFECT VACCINATION, OR SOME CAUSE WHICH INTERFERED WITH THE REGULAR AND COMPLETE PROGRESS OF THAT INFECTION TO BE THE MAIN SOURCE OF SUCH EVILS—SOME OF THE DIFFICULTIES WHICH PERPLEXED THE SUBJECT IN EDINBURGH; ALSO, FROM A DEGREE OF UNCERTAINTY THAT PREVAILED REGARDING THE CHARACTER OF THE EPIDEMIC AT ITS FIRST APPEARANCE, DR. HENNEN AND OTHERS WERE INCLINED TO THINK THAT THE DISEASE WAS VARICELLA OR CHICKEN-POX OF A MALIGNANT CHARACTER—ABANDONMENT OF THIS VIEW—INVESTIGATIONS OF DR. ALEXANEER MONRO, OF EDINBURGH, OF THE VARIETIES OF SMALL-POX AND THE EFFICACY OF COW-POX INOCULATION—HIS EXPLANATION OF THE CAUSES OF THE PREVALENCE OF SMALL-POX IN 1817 AND 1818.

In the course of the year 1818 a violent epidemic of small-pox prevailed in many parts of Great Britain, as well as on the continent; an increased hostility was evinced to the practice of vaccination; and doubts of its efficacy, which had been artfully excited, soon propagated to other parts of the world. The small-pox was unusually fatal and malignant in Edinburgh and several other places in Scotland; it killed a very large proportion of those whom it attacked in the natural way; and it likewise spread to many who had previously had small-pox, as well as cow-pox.

Dr. Jenner believed improper vaccination, or some cause which interfered with the regular and complete progress of that affection, to be the main source of such evils. He admitted that small-pox might succeed perfect vaccination, just as small-pox does succeed small-pox; but the great number of failures which were reported to have occurred, he thought, could only be accounted for by supposing that some circumstances interrupted the proper influence of vaccination in the system. One of them he conceived to be the existence of cutaneous disease.

There can be no doubt of the truth of Jenner's main proposition, published in his circular letter, namely, that when vaccine failures were very frequent, there must have been some imperfections either in the virus or in the progress of the affection. This fact is rendered manifest by the different degrees of success which have attended the practice of different individuals. After patient inquiry, Dr. John Baron, the learned and accomplished author of the life of Dr. Jenner, did not know of more than six or eight cases of small-pox after cow-pox among all Dr. Jenner's patients. This proportion is probably no more than might have occurred had he inoculated for the small-pox instead of the cow-pox.

Some of the difficulties which perplexed the subject in Edinburgh, arose from a degree of uncertainty that prevailed regarding the character of the epidemic at its first appearance, Dr. Hennen was inclined to think that

he disease was varicella or chicken-pox, of a malignant character. He vas obliged, however, to abandon this notion. Dr. Thompson went further han Dr. Hennen; and in a very elaborate work endeavored to prove that he varicella, instead of being a distinct and peculiar disease, as had been enerally supposed, was only a variety or modification of small-pox.

Dr. Hennen in his paper on eruptive diseases, thus expressed his belief n the efficacy of vaccination: "So perfectly convinced am I of the pre-enting and modifying powers of the vaccine inoculation, that I should ever hesitate about employing it, even though it were probable that my atient had imbibed the small-pox infection. Nor should I be deterred rom the practice by the idle supposition of the nurse that I was too late, r the learned objection of the doctor that the two diseases could not co-xist; *experience very clearly demonstrating, that there is still something in the utual relations of these diseases to each other that has not yet been satisfac-rily elucidated.*

"After the most mature deliberation, I most explicitly avow, that noth-ng has occurred in these cases which has in the smallest degree shaken y opinion of the great and pre-eminent importance of the practice of accination; whether we view it as a preventive of small-pox in a vast ajority of cases, or as a most effectual neutralizer of its malignity in the omparatively few instances in which from some peculiarity of constitu-on, or some anomaly in the process hitherto but fully developed, it has iled to afford this permanent security."

There can be no doubt that during the first years of vaccine inoculation here had been great carelessness and inattention in conducting the ractice. And in 1818, there were numerous complaints of the bad quality f the vaccine lymph. Dr. Jenner received hints of this kind from Italy, om America, and many parts of England.

The greatly exaggerated statements on this subject of the vaccine fail-es, and the hesitating manner in which many respectable physicians oke on the subject, threatened to lead to a considerable abandonment of is practice.

Under these circumstances Sir Gilbert Blane rendered distinguished rvices to the cause of vaccination, by proving by the most conclusive asoning, and an appeal to the most authentic documents, that the portance of the vaccine discovery was not in the most essential points low-ed by the failures which were alleged to have taken place. In order to ring this matter to the test of calculation Sir Gilbert Blane, selected om periods, each of fifteen years, for the purpose of exhibiting the com-rative mortality of small-pox. The last series comprehended the time in hich the vaccine inoculation had been so far diffused as to produce a table effect in the deaths from this disease. The result of the whole as, that even under the very imperfect practice of vaccination which d taken place in London, 23,134 lives had been saved in the fifteen years luded to, that is from 1804 to 1818 inclusive.

VESTIGATIONS OF DR. ALEXANDER MONRO ON SMALL-POX AND VACCINATION.

Dr. Alexander Monro, Professor of Anatomy and Surgery in the Uni-rsity of Edinburg, in his "observations on the different kinds of small-x, and especially on that which sometimes follows vaccination," pub-hed in 1818, states in the introduction, p. 24, with reference to the ease in Scotland:

"All the cases of small-pox which have lately occurred have been imputed to the inefficiency of the cow-pox; whereas I have ascertained upon grounds perfectly satisfactory to myself, that a few only have originated from that cause, as in a great majority of the instances of small-pox now to be observed among the lower orders of society, vaccination had never been performed, and in others it had been imperfect.

"It ought not to be forgotten, that in the first instance at least, Dr. Jenner's discovery appeared, in one important respect, to be rather incomplete; it did not furnish the inexperienced eye, a certain means of distinguishing whether the disease be genuine or not, and also whether the constitution of the patient had been actually subjected to the influence of the cow-pox—a great desideratum. That desideratum was still required, I mean *a test for distinguishing whether or not the influence of the cow-pox has been constitutional or only local.* This was supplied by the ingenuity of Mr. Bryce, who discovered, that by re-inoculating on the fifth day on the other arm, the pimples on both arms follow exactly the same course, and arrive at maturity at the same time if the disorder has been constitutional; and this is what I understand by *perfect vaccination.*

"But though it cannot be denied that vaccination has failed to give perfect security against the small-pox, yet in the cases where it has failed to do so it has modified and mitigated that loathsome and dangerous disorder in a most remarkable manner, so that the small-pox after cow-pox can scarcely be said to form one of the class of mortal diseases. P. 24-25.

Dr. Alexander Monro communicates the following as the chief causes which had led to the failure of the vaccine inoculation.

"1. The matter for inoculation has sometimes been taken from a spurious sore, which, though it occasioned a vesicle, and excited inflammation in the inoculated patient, did not communicate the genuine disease, or it has been taken from the true sore at too late a stage of its progress: and hence, though it occasioned acute inflammation, it did not communicate the true cow-pox.

"2. If the lancet on which the matter of small-pox is present shall become rusty, the rust of the steel decomposes the poison.

"3. If the vaccine vesicle has been repeatedly punctured or drained for two or three successive days, the inoculation generally fails; for the poison which, in the progress of the disease, is depositing in the cells of the vesicle, is thus exhausted, or may be so much diluted as to be incapable of producing the disease.

"4. The matter taken from the genuine cow-pox vesicle may be injured by heat, exposure to the air, or moisture.

"5. If the matter be taken from the cow-pox vesicle after the thirteenth day, it 'does not,' according to Willan, 'produce the genuine cellular vesicle, but is in some cases wholly inefficient, while in others it suddenly excites a pustule or ulceration; in others a regular vesicle, and in others erysipelas.'

"6. If the crusts employed for cow-pox inoculation be kept in a high temperature, or in a damp place, they soon acquire, as Mr. Bryce has well observed, a peculiar smell, which marks their loss of power to reproduce the cow-pox.

"7. The inoculation for cow-pox does not take effect when the child labors under other cutaneous disorders, as measles, scarlatina, itch, herpes, tenia capitis, or cruita lacta."

"Imperfect vaccination," says Dr. Willan, "is not characterized by any uniform sign or criterion, but exhibits in different cases very different appearances, as pustules, ulcerations, or vesicles of an irregular form. The vaccine pustule is conoidal; it increases rapidly from the second to the fifth or sixth day, being raised on a hard, inflamed base with diffuse redness, extending beyond it on the skin. It is usually broken before the end of the sixth day, and is soon after succeeded by an irregular yellowish-brown scab. The redness disappears within a day or two, and the tumor gradually subsides."

According to Dr. Jenner, "the commencement is marked by a troublesome itching, and it throws out a premature efflorescence, sometimes extensive, but seldom circumscribed or of so vivid a tint as that which surrounds the pustule (vesicle) completely organized and (which is now characteristic of its degeneracy than the other symptoms) it appears more like a common festering produced by a thorn, or any other small extraneous body sticking in the skin, than a pustule (visicle) excited by any vaccine virus. It is generally of a straw color, ond when punctured, instead of the colorless transparent fluid of the perfect vesicle, its contents are found to be opaque."

According to Dr. Alexander Monro, "when the vesicles are irregular or imperfect there is commonly premature itching, which is so great as to promote scratching, inflammation and the formation of matter.

"The progress of the vesicle is too rapid, its texture is soft, and it is apt to be broken; the border is not well defined, the middle is raised, and the contents discolored or purulent, and it is encircled by a premature efflorescence of a dirty purple hue, and the scab is of an ambre color.

"It has been mentioned by Messrs. Dawson and Kate (Transactions of College of Physicians, vol. 3) that the part into which the variolous poison has been inserted, inflame

nd a pustule is produced, which is filled by an active variolous poison, capable of excit-
ng the disease in others, without the person himself being constitutionally affected by
mall-pox, *or being by this pustule on his body* rendered unsusceptible of variolous conta-
ion at a future period of his life. The same has been observed by several others, and
his may undoubtedly happen in cow-pox as well as in the small-pox inoculation, and
us form a fruitful source of disappointment in conducting vaccination.

"All of these difficulties have been removed by the ingenuity of Mr. Bryce, who has
pplied us with a certain test for determining these important points, which consist in
inoculating the child on the other arm on the fifth day after the first inoculation. If
e constitution has been affected, the vesicles on both arms arrive equally soon at matu-
ty, and also fade together. The arguments advanced in favor of Mr. Bryce's test are
unded on the most vigorous investigation, and in my mind amount to a complete dem-
stration of its importance, and have been confirmed both by the testimony of experi-
ce and of public opinion. My father, in his lectures, used always to express his utmost
nfidence in Mr. Bryce's test as a mark that the constitution has been affected, and also
s opinion that its ingenious author merited a public reward, he considered Dr. Jen-
r's discovery to be incomplete."—*Observations on the Different Kinds of Small-pox*, and
pecially on that which sometimes follows vaccination; illustrated by a number of
ses. By Alexander Monro, M. D., F. R. S. E., Professor of Anatomy and Surgery in
e University of Edinburgh, Fellow of the Royal College of Physicians, Etc., Edin-
rgh, 1818; pp. 108-113.

The following account of the TEST OF MR. BRYCE, *for Successful Vaccination*, is given in the author's own words, and it is worthy of consideration, not merely on theoretical grounds in connection with the history of cow-pox inoculation, but more especially at the present time, when vaccination is too often performed in a careless manner, or when hostility to the measure appears to have received a new impetus.

MR. BRYCE'S TEST.

"I am thoroughly convinced that some clear and well defined mark of a constitutional
ection in cow-pox, different from what has hitherto been observed by those who have
itten on the subject, is still to be regarded as the grand desideratum in conducting
s new inoculation; for, until this be established, our judgment of the efficacy of the
w-pox inoculation in preventing small-pox, must often be formed with doubt and anx-
y, and too frequently prove ultimately erroneous. The truth of these remarks will
best known to those mostly conversant with the cow-pox inoculation, and who are
ustomed to observe the great variety of appearances which the affection at the part
culated often assumes.

"For some time after the introduction of the cow-pox inoculation into medical prac-
e, many cases were related in which an eruption of pustules, more or less numerous,
s said to take place, similar to what happens in small-pox. While these reports were
pagated, and certified by men who seemed worthy of credit, even although no in-
nce of the period had come under my own observation, I entertained hopes of so con-
cting the new inoculation in every case as to obtain a certain and well-defined mark
constitutional affection; for, if an eruption of pustules belonged to cow-pox in any
e, as a consequence of the peculiar fever or constitutional ailment thereby induced, I
ught that one or two pustules might be made to appear in every case. It is well
wn that by irritating any part of the skin, by the application of heat, or a stimulat-
plaster, or various other substances, we can produce a greater number of pustules of
ll-pox upon that particular part than would otherwise have appeared; and judging
n analogy, I expected that the same theory might have been affected on cow-pox.
h trials I have made; and although they were conducted with as much anxiety and
e to produce pustules as other persons seem to have taken to avoid producing them,
they have constantly failed; nay, these trials have now been made under such a va-
y of circumstances without effect as to confirm me in the opinion, that an eruption
ustules, as a consequence of a constitutional affection, does not belong to the cow-pox.
Foiled in my attempts so to conduct the inoculation of cow-pox as to produce pus-
s, I recollected some experiments which had been made with regard to the inocu-
n of small-pox. It was found that if the same person was inoculated every day
the fever induced by the first inoculation supervened, all the other punctures
kly advanced in their progress; and that, in the course of a day from the time the
r or general affection began, even that puncture which had been last made, perhaps
twenty-four hours before, and from which the fever had arisen.

In this case, it appears to me evident, and I think must be admitted by every per-
that even had no other pustules appeared on the body than those occasioned by the

repeated inoculations, nay, had there even been no fever observed in consequence of the inoculation, yet as the pustule occasioned by the last puncture, had been suddenly accelerated in its progress to maturation, at the time the general or constitutional affection should have appeared, this alone was a sufficient proof of the presence of the variolous action in the system.

"Judging again from analogy, I expected that the same thing, which thus happened in the small-pox inoculation, might also take place in that for the cow-pox; and the unexpected appearance of one or two vesicles upon children that I had inoculated, which vesicles were quite characteristic of the ailments, and the appearance of which could only account for from a second and accidental inoculation during the course of the disease, strengthened my hopes. And certainly, if we find in cow-pox, when the inflamed and hard areola does not take place, at least in the regular course of that affection, until the end of the seventh or beginning of the eighth day from inoculation, performed for example at the end of the fifth or beginning of the sixth day, is so much accelerated in its progress, about the time the general affection of the system usually takes place, as to have an areola formed within a few hours, or very shortly after the first, and that this areola increases with the first, and again fades at nearly the same time, we must be struck with the similarity, and be forcibly led to draw the same conclusion in this case as in the former, respecting the small-pox, viz: that although the inoculated affection had appeared very slight, and no fever had been observed, yet that a certain action had been excited in the constitution. That this was the true constitutional affection of cow-pox, may be judged by the acceleration of the second vesicle to a state of maturity, five days before this could have happened, had there been no consentaneous general action or change in the system.

"The truth of this opinion was also soon put to the test of experience; and I have now much satisfaction in declaring that the result appears to answer my most sanguine expectations.

"In short, my observations on this point lead me to conclude, that, in order to obtain the proposed criterion in the greatest perfection, the second inoculation should be performed between thirty-six and forty-eight hours before the areola of the first inoculation begins to appear. This is necessary, in order that the secondary affection may have proceeded some length, and that a small vesicle containing virus may have been formed in it, before the constitutional action from the first inoculation begins, otherwise no areola but merely a slight degree of hardness will take place from the second puncture.

"As, on the one hand, the acceleration of the second inoculation in the manner above mentioned is to be regarded as a certain mark of a constitutional affection in cow-pox; so, on the other, if it shall be found that no such acceleration takes place, but that the second inoculation proceeds by a slow progress through all the stages, and has the duration of a primary affection, it is to be concluded that no constitutional action has taken place from the first insertion of the virus, and when this is the case, the second inoculation must be regarded as a primary affection, and a third puncture be made according to the plan laid down for conducting the second inoculation; and thus we may go on until the proper tests be obtained, or until we be satisfied that the constitution completely resists the action of cow-pox."

The directors of the cow-pox institution of Dublin, in their annual report for 1817, professed themselves utterly incredulous of danger from the small-pox, after vaccination, conducted with due attention, to TESTING ACCORDING TO MR. BRYCE'S PLAN (when practicable,) to the formation of the areola, and of the scabbing process from the twelfth to the thirteenth or fourteenth day on an average: they had reason to believe that many practitioners were not sufficiently attentive to the formation of the areola and scab.

The test of Mr. Bryce had met with the approbation of Dr. Jenner as early as the year 1803. Thus in a letter to Mr. Bryce, dated April 5, 1803, Dr. Jenner says:

"I must admire your precaution in using a test of the certainty of infection; your ingenuity in the manner in which you employ it. On all young vaccinators cannot be too strongly enjoined. The *experienced* will determine from the character the pustule. The evidence before the House of Commons evinces the propriety of your observations.

"I put your crust into the hands of my friend Ring, and he informed me yesterday that it had produced a good pustule. Experience now tells us this is a good mode of sending the vaccine virus to distant parts."

PINION OF THE MEDICAL PROFESSION IN 1818, AS TO THE PROTECTIVE POWER OF VACCINATION AGAINST THE SMALL-POX.

The public and professional mind was much agitated by the appearance an eruptive disease resembling small-pox, and apparently produced by all-pox infection, in many persons who had been formerly vaccinated, ring the years 1817 and 1818, and the following questions were seriously pounded in less than a quarter of a century after the promulgation of Inquiry of Edward Jenner on the variolæ vaccinæ:

. In what proportion do failures occur in vaccination?

How many cases of small-pox or varioloid occur in any given number of cinated persons exposed to the variolous poison?

. To what is it owing that vaccination proves a preventive against small- in some cases, and fails in others? Is it owing to the constitution of individual? Is it owing to the vaccine virus with which they are in- lated? Is it owing to the manner of vaccination? Is it owing to the gress and treatment of the cow-pox?

. Has the vaccine virus frequently deteriorated, from the employment ymph in succession, from vesicles which had not gone through the stages h perfect regularity? Has the imperfect vaccine vesicle thus pro- ed the power of rendering the human frame susceptible of none but mitigated form of small-pox?

s it true, that by improper treatment, by accident, or by puncturing vaccine vesicle too freely, enough of the virus to affect and secure the stitution will not be left to be absorbed?

How does the degree of protection differ? Is it absolute in any case? there cases in which it is capable of resisting the most powerful ap- ation of the variolous virus, while others are susceptible of its slight- application? or, do the degrees of protection pass insensibly into each r, from the highest to the lowest?

Does the protection originally given gradually wear out as to suscep ity of infection?

Does the protection originally given, gradually wear out as to the er of modifying subsequent small-pox, or does it originally differ in de- ?

. In what respect do the powers of vaccination, in modifying subse t small-pox, differ from those of natural and of modified small-pox?

e belief of the careful observers in the Medical Profession, in 1818, in ence to the preceding queries may be thus formulated.

. Vaccination seems to afford permanent protection against small- infection in a large proportion of cases.

. In some instances it only affords imperfect protection; or there are nces in which from variolous infection a modified small-pox is pro- d.

. In some instances it seems to afford only temporary protection; or are persons, who, after having repeatedly been exposed to variolous ion, are at last inflicted by it, and pass through the disease in a ified form.

(*d*). In the small-pox modified by previous vaccination, the eruptive fever is often severe, the eruption sometimes numerous and general, in some cases even confluent, but the pustules are smaller, and dry up on the sixth and seventh days, without secondary fever.

(*e*). This modified small-pox is capable of infecting others, both by inoculation and naturally. It produces modified small-pox in persons previously imperfectly protected by vaccination, and regular small-pox in those who have neither been vaccinated nor had the small-pox.

(*f*). In some instances, persons who have previously had the small-pox, whether from inoculation or infection, have had a second attack of small-pox, similarly modified, from exposure to variolous infection or from variolous inoculation.

The constitutional disorder thus excited is generally more slight than a first attack of small-pox; but there have been recorded more instances of persons suffering severely, nay fatally, from what was considered to be a second attack of small-pox, after what has been considered perfect vaccination.

(*g*). There is no evidence to conclude that the virus of cow-pox is deteriorated by passing through, or being regenerated on a variety of human constitutions, provided it be taken from a regular vesicle at the period when most active.

(*h*). There is no evidence to conclude that the protecting influence imparted to the human constitution by perfect vaccination, diminishes by time, and ultimately leaves the constitution as susceptible of small-pox as before vaccination was performed. In some very rare instances, in which persons are said to have died from the attack of small-pox after cow-pox, this occurrence may be fairly attributed to some error in conducting the previous vaccination:

(*i*). The same general rule ought to be applied to the small-pox and the cow-pox, with regard to their powers of protecting the constitution of those who have undergone their influence, against a future attack of small-pox.

(*j*). The advantages arising to society from propagating the cow-pox in place of the small-pox, are so many, and so conspicuous, as to admit of no hesitation in concluding that the former ought on every occasion to be encouraged, and the latter repressed, with the most effective measures and active exertions.

DR. THOMSON'S THEORY OF THE IDENTITY OF CHICKEN-POX, AND MODIFIED SMALL-POX.

In 1809 Mr. Brown of Musselburgh, published the opinion that the prophylactic virtue of the cow-pox diminished as the time from vaccination increased; and this view was strengthened, by the occurrence of many cases of a mild form of variola, in vaccinated persons, during the epidemic of small-pox of 1818 and 1819; and at this time the term modified small-pox was adopted. In addition to the work of Dr. Monro (published in 1818), "*the different kinds of small-pox, and especially on that which sometimes follows vaccination*," an analysis of which has been presented, Dr. John Thomson of Edinburgh, published "some observations on the varioloid disease which has lately prevailed in Edinburgh, and on the identity of chicken-pox and modified small-pox," in a letter addressed to Dr. Duncan, Jr. dated fifteen

eptember, 1818, (Edinburgh Medical, Surgical Journal No. L., 6). Dr homson reproduced this paper in his "*Account of the Variolous Epidemic hich has lately prevailed in Edinburgh and other parts of Scotland*," etc., ublished in 1820.

The following is a brief statement of the conclusions of Dr. John Thomn of Edinburgh as detailed at length in the preceeding publication :

1st. The varieties which appeared in the epidemic of 1818 convinced Dr. homson, that the descriptions which had been given of the appearance nd progress of the eruption in small-pox by the best systematic authors e in many respects imperfect; that the diagnostic marks which have been ointed out between small-pox and the disease that has been termed chickx, are not to be relied upon; and that no appreciable marks of distincon between modified small pox and chicken-pox have hitherto been esblished.

2. It appears from the records of medicine, that the same person may ve small-pox twice or oftener during life.

3. It has been incontrovertibly established by Dr. Jenner and his follows, that cow pox has the property of rendering those who have passed rough it much less susceptible of small-pox infection than they were be-e; and besides this, that it possesses also the invaluable property of odifying the small-pox in those who receive them, and of converting em, from the most fatal of all diseases, to one scarcely, if at all, fatal.

4. By admitting that small-pox possesses this modifying property, it folws, that, in the instances in which they exerted this influence, previously the discovery of cow-pock, they must have produced a mild or less fatal ecies of small-pox, but a species which has not been recognized or pointed t as differing from natural small-pox. It seems, therefore, probable, that s secondary small-pox, must have formed a considerable portion of the rioloid eruptions that were formerly denominated the spurious small-pox, d afterwards by some the chicken-pox.

5. After Dr. Heberden had distinguished chicken-pox from small-pox, d had convinced himself and the medical world, that these diseases se from two contagious poisons, specifically distinct from each other, it ms probable that the cases of modified secondary small-pox which may e occurred, must have been described as cases of chicken-pox, since we where find any hint of the possible co-existence of these two diseases, the danger in which medical practitioners are of confounding them toher.

Can it be that the hypothesis of the contagion of chicken-pox being cifically different from that of small-pox, has been had recourse to, order to explain those cases of secondary small-pox which may have urred after variolous inoculation, and in the benevolent wish of vindiing that practice from the suspicion of being inefficacious?"

r. Thomson regarded the epidemical disease in Edinburgh as the same n those varioloid diseases which, since the introduction of cow-pox inlation, had been observed in England, Scotland and other countries, and ch have been by some medical practitioners regarded as small-pox, and others as chicken-pox. Appendix, pp. 1–11.

ESTABLISHMENT OF REVACINATION.

nall-pox was epidemic in France in 1826 and 1827, and in the northern of Italy in 1827; and in consequence of the numbers of those vaccinwho had been attacked by small-pox more or less modified or unmod-

ified, the practice of REVACCINATION commenced in Prussia, and the German States, and was subsequently encouraged by their governments.

In 1832-4 small-pox prevailed epidemically in Ceylon, when a considerable number of those vaccinated died; and it made great devastations in Hindoostan on several occasions, both prior and subsequently to this date, and many of those vaccinated were carried off with it. Dr. Gregory states that the admissions into the Small-pox Hospital in 1838, more than doubled the average number received annually, prior to the discovery of vaccination, and that two-fifths of the admissions consisted of persons who had been vaccinated. Many of them had the disease severely and more than twenty of the number died.

Some of the earliest, and at the same time most conclusive testimony in favor of REVACCINATION, was furnished by its results in the Wurtemberg, Hanoverian, Bavarian, and especially in the Prussian armies.

REVACCINATION was first commenced systematically in the Prussian armies in the year 1833, after having been practiced in the Wurtemberg army and among smaller bodies of men for several years previously, and recommended by several leading practitioners, and has been continued in that and several other armies, and also among large bodies of citizens.

The following have been recorded as the results of revaccination:

In Wurtemberg but one case of variolæ occurred in five years among 14,384 revaccinated soldiers, and three only among 26,864 revaccinated civilians.

Not a single case of small-pox occurred among those who had been revaccinated in the Prussian army in 1836, 1837, or 1839.

But three deaths by this disease occurred in all the military hospitals of Prussia in 1841, and of these, one was in a person not vaccinated on entering the army, because it had been done shortly before; a second in a recruit who had not been revaccinated; and the third in an officer who had been revaccinated some years before, but without success.

In 1834 two deaths are recorded of those who had been revaccinated with effect in the Prussian army, and one in 1843. In 1849 but one case was fatal, and this was in a recruit vaccinated when a child, and who had not yet been revaccinated.

During an epidemic of small-pox in Copenhagen, in 1828 to 1832, and another in 1835, but a single case of variolous or varioloid disease was observed among any who had been revaccinated.

In the Danish army, of those who were successfully revaccinated in 1838, not one was attacked with small-pox.

In an epidemic of variola at Heidelburgh, in 1843 and 1844, described by Dr. Hœfle, of all those attacked not a single one had been previously revaccinated, while the vaccinations most successfully made did not protect from the most severe varioloid those older than ten years.

Steinbrenner, as the result of extensive investigation of the subject says, "Revaccination is the indispensable complement of the first vaccination, not that it is always necessary, as some pretend who admit the loss of its protective power by time, but because it is necessary in very many cases, and because there is no other means of distinguishing such urgent cases from those in which revaccination is unnecessary." (Traité sur la Vaccine, p. 684.)

Steinbrenner derives his arguments in favor of revaccination from its effects in the different European armies, as well as when performed by various individuals on a small scale, of which he presents a long array; and says that in the absence of every other argument, those results are strongly

in its favor, because it is impossible that the process should be so often successful unless the success depended upon a predisposition which exposed the individuals to variola.

M. Bosquet says, after giving a long list of instances of protection by revaccination without a failure, even in the midst of epidemics, "There has not been an epidemic which has not proved at the same time the virtues both of vaccination and revaccination. The success of revaccination is at the same time the effect and the proof of the wants of the system. When it succeeds, it not only proves that the protective power of vaccination is diminished, but it supplies a remedy for this diminution." (Nouveau Traité à la Vaccine, Paris, 1848, p. 506.)

The following are the conclusions on this subject of the Committee on Vaccination, of the French Academy, as contained in their report to this body in February, 1845:

1. Small-pox rarely attacks those who have been vaccinated before the age of ten or twelve, from which age, until thirty or thirty-five, they are particularly liable to small-pox.

2. Re-vaccination is the only known method of distinguishing those vaccinated persons that remain protected from those that do not.

3. The success of re-vaccination is not a certain proof that the person in whom it succeeds was liable to contract small-pox; it merely establishes a tolerably strong presumption, that he was more or less liable to take it.

4. In ordinary periods, re vaccination should be practiced after fourteen years, but sooner during an epidemic.

The following are among the conclusions of a report on the subject of vaccination made by a committee to the Belgian Academy of Medicine.

As the immunity conferred by vaccination is not indefinitely absolute, revaccination, at least for a great number of individuals is rationally vindicated.

Experience has proved that a recent re-vaccination preserves from variola and varioloid, and that practiced on a sufficient scale, conjointly with vaccination, it constitutes a sure means of arresting the progress of this malady when it appears epidemically.

It succeeds but in proportion as it is most required, that is, the more remote the period since the individual had variola, or has been vaccinated.

During the prevalence of an epidemic of variola or varioloid, it is prudent to re-vaccinate all those whose first vaccination dates ten years back, and all those whose first vaccination gives rise to any doubts. (Brit & For, Md. Chir. Rev., January, 1851.)

PROFESSIONAL VIEWS HELD IN 1839, AS TO CORRECT VACCINATION AND IMPEDIMENTS THERETO.

In the able "Report of the section appointed to inquire into the present state of vaccination," read at the Anniversary Meeting of the Provincial Medical and Surgical Association, held at Liverpool, July 25, 1839; the Reporter observes on the discrepancy that obtains in the statements and ideas of medical men upon the protective influence of vaccination:

1. The only perfect test is the insertion of variolous lymph. This, however, is obviously objectionable.

2. The regular progress of the vaccine vesicle. To determine this, the surgeon should note it at proper periods. The genuine disease can only be produced by pure lymph from a regular source. The time for taking this lymph, according to Dr. Jenner, is between the fifth and eighth days,

and before the formation of the areola. Others have recommended the use of the lymph taken at a much latter period, but this they believe to be a very questionable practice.

3. Jenner proposed that some fresh vaccine lymph should be inserted into the patient after the first vaccination. This practice was founded on the observation that the second vaccination proceeds with accelerated speed, provided the first has taken effect. It is a very simple and beautiful illustration of the constitutional effects of vaccination and deserves to be encouraged. An experienced eye will for the most part be able to detect any deviation from the true vesicle.

4. The character of the lymph employed; it never ought to be taken from a vesicle which deviates in the least degree from the perfect standard, or from a patient laboring under any cutaneous disease.

5. A point which ought ever to be insisted upon, is the leaving one or more vesicles to run their course without being in any way disturded.

6. The appearance of the cicatrix; the reporters think that this has been too much trusted, They are inclined to believe that though the presence of a perfect cicatrix is not a sure sign of protection, its absence must be held to speak strongly against the existence of vaccine influence. Yet the observation of Mr. Dodd would seem not to bear out this impression. Of fifty.seven cases that have been exposed to the contagion of small-pox and escaped, in six only was the cicatrix perfect; in fourteen it was slightly defective; in thirty it was very imperfect; and in seven it was totally wanting. Out of seventy-seven cases of small-pox after vaccination, on bore a perfect mark, fourteen had the cicatrix slightly defective, forty seven were imperfect, and fifteen had none at all. Thus, to sum up th whole, out of one hundred and thirty-four cases of vaccinated persons wh had been exposed to small-pox, the cicatrices of seven were perfect, an one of these failed; twenty-eight slightly defective, of which fourtee failed; seventy-seven very imperfect, forty-seven of which failed; twenty two had no mark at all, and of them fifteen had small-pox, while seven a together escaped.

7. Vaccine lymph, though passed through a great number of subjects and used for a great number of years, does not necessarily become dete iorated. This, however, can only be said when unceasing attention is pai to every successive transmission; for if a deviation commences, it may l perpetuated, and afford a gradually decreasing protection. There is n doubt that lymph of this kind have been often used.

8. The influence of cutaneous diseases on the vaccine vesicle has be insufficiently attended to. Dr. Jenner pointed out that the affection w very much modified in its progress by the scaly tetter, and those affectio described by Dr. Willan under the term *psoriasis*, as well as those vesic lar eruptions commonly called herpetic. He observes that vaccinati performed on a skin occupied by any of these diseases, "produces eve gradation from that slight deviation from perfection, which is quite imm terial, up to that point which affords no security at all."

9. Other constitutional peculiarities stand in the way both of hum small-pox and cow-pox. Some resist these affections at one period of th lives and not at another; and there are examples of the very opposite c dition, which show that the individual will receive either infection as oft as it is presented to him These peculiarities frequently run in famili We know several children of the same parents who have had morbi small-pox after cow-pox; and not many months ago three brothers h small-pox after cwo-pox, one of these cases proving fatal. On this su

ect we have illustrations from Mr. Dodd, who tells us that six brothers and sisters in one family having been vaccinated when children, had the small-pox a few years afterwards.

In another instance, two sisters vaccinated in infancy, were subsebuently inoculated and had the small-pox slightly, they both had it again in 1837, and one of them had it very severely. Their father caught the small-pox; their mother too, who was inoculated when young, had it again in the same year; their maternal grandfather, beholding from a window at night, the funeral of a friend who had died of small-pox, sickened of that disease and died. There are a few of the affiuities and concordances betwcen human small-pox and cow small-pox; and we doubt not that every subsequent observation will establish the analogies. In confirmation we further remark, that the great object of inoculation with human small-pox, was to produce an affection as much like that of cow-pox as possible, and by great care in selecting the virus to be employed this was sometimes accomplished in a very remarkable degree. On the other hand, it is known that the disease, when casually caught from the horse or cow, is often a severe one—as severe, it was said by an experienced observer, as for the most part was inoculated small pox. We ourselves have seen it, when caught from the horses, exhibiting great intensity, the hands and arms being covered with the eruption."—*Transactions of the Provincial Medical and Surgical Association Instituted* 1832, *Vol.* 8., *p.* 39. *Medico Chirurgical Review*, *Oct.*, *Vol.* 37, 1840.

ON THE COMPARATIVE ADVANTAGES OF THE INOCULATED SMALL-POX AND OF THE COW-POX—HISTORY OF SMALL-POX INOCULATION—MORTALITY OCCASIONED BY NATURAL SMALL-POX, INOCULATED SMALL AND COW-POX—STATISTICS ILLUSTRATING THE GREAT BENEFITS CONFERRED ON THE HUMAN RACE BY VACCINATION.

HISTORY OF SMALL-POX BY INOCULATION.

The Roman Empire was finally overturned by the Northern Barbarians in the sixth century of the Christian era; from that event literature and art lay for many centuries afterward buried in the ashes of Rome. The crash of this immense colossus was soon succeeded by another memorable catastrophe; the Arabians, in 622, under Mahomet, sallied forth from the East, sword in hand, to propagate his religion, and with rapidity subdued several great kingdoms and princes in the West.

Three new diseases, the small-pox, the measles, and the spina ventosa, were first described by the Arabians. The two former diseases had never before been seen in any part of the globe frequented by Europeans; at least no history of them has been found in any ancient medical author, poet or historian of either Greece or Rome. Mahomet's followers are said to have exported these two specific poisons from the deserts of Arabia. The variolous poison was soon spread by the Mahomedans through Palestine, Syria, Egypt, Persia, Spain, and wherever they carried their victorious arms. Many centuries after, the Crusades, or Holy Wars, were instrumental in diffusing this exotic venom more widely over Europe.

The small-pox and measles, thus introduced by the Mahomedans, unpeopled more of Europe than all the fiercest wars or bloody exploits with which its annals are stained.

The exact time and place of the origin of the small-pox is shrouded in mystery; for it must be considered as a most extraordinary circumstance so contagious a disease, the poison of which adheres to clothes, linen, woolen, cotton and porous materials, during a long time, and has in this way been conveyed to very distant kingdoms, could have been circumscribed, and its ravages confined for several thousand years to a small corner of the globe, not divided by sea, from the rest of Asia.

Dr. Mead thinks that the small-pox was first generated in the hot climate of Ethiopia, and together with the plague, transported from thence across the narrow channel of the Red Sea into the opposite continent, Arabia; but if small-pox had been a disease anciently known in Ethiopia (which no one has proved) there were various opportunities for the infection being carried down the Nile into Nubia and the heart of Egypt, countries bordering on Ethiopia and of the remotest antiquity in arts and civilization, holding at various times commercial and military relations with the nations of Africa, Europe and Asia. The Romans in the height of their glory and after the conquest of Egypt, carried on a considerable trade with Arabia and India; one hundred and twenty vessels sailed annually down the Red Sea, traversed the Arabian coast, and arriving at the Malabar shores in India, and the Island of Ceylon, returned from thence loaded with cinnamon, pepper, ginger, silk, pearls and diamonds. Mecca, the birth place of the Mahomedan prophet, stands on the borders of the Red Sea. Throughout all this intercourse of great nations, variolous infection, seems not to have been dispersed amongst the great kingdoms, bordering on the Mediterranean, Red Sea, and Indian Ocean.

Mr. Holwell, who resided a great part of his life in India, published about the middle of the eighteenth century, a treatise on the practice of INOCULATION, and the treatment of INOCULATED SMALL-POX, in HINDOSTAN. Mr. Holwell states that it is believed in India, that Small-pox raged there time immemorial, and that the BRAHMINS or priests, time out of mind have practiced INOCULATION. The Turks ascribe the origin of the practice to Circassia, formerly one of the Asiatic provinces of Turkey. It has been conjectured, therefore, that it is to India, that Europe is originally indebted for this important discovery through the medium of the Circassians.

Neither Rhazes, Avicenna, nor any of the Arabian physicians, who wrote in the ninth or tenth centuries, make the least mention of INOCULATION; had variolous poison been transported from India to Arabia, the physicians of the latter nation could not have remained ignorant of a practice, according to Indian tradition, so universal and ancient, and attended with such happy consequences.

INOCULATION IN INDIA is performed by a particular tribe of Brahmins who were delegated annually for that purpose, and who made a tour or separate circuits in traveling parties to inoculate the distant provinces; arriving at the place of destination a few weeks before the return of the natural disease. The inhabitants who intend to have themselves or children inoculated, know the time of the Brahmin's arrival, and abstain according to established rules universally known, for one month before the inoculator's periodical visitation, from fish, milk, and a kind of butter made of Buffalo's milk; this is the invariable and only preparatoy regimen.

The Brahmins inoculate generally on the outside of the arm, the male about the middle, between the wrist and the elbow; the female between the elbow and shoulder. The operator first rubs the parts with a dry cloth, during eight or ten minutes; then with a small instrument made like a crow-quill, and sharp at the point, he makes in a small space, which might be covered with a silver six-pence, several slight scratches, so that the smallest appearence of blood may be perceptible; a pledget impregnated with variolous matter is then applied, after being wetted with a little water from the Ganges; over all a bandage is rolled; six hours after the bandage is removed, and the cotton left to fall off of its own accord.

VARIOLOUS MATTER, *taken from* INOCULATED SMALL POX, of *the preceding year is* generally used for *inoculation; but is never received or preferred from natural small-pox, however mild and distinct.* There are many instances, says Mrs. Holwell, of the variolous matter entangled with cotton, and kept close stopped from the air in a bottle during five or six years, at the end of this period proving active.

The same careful regimen in diet is continued through the disease, as before inoculation. Every morning before sunrise, or every evening after sunset, the patients, from the first day after inoculation, are stripped naked, and sluiced over the head and body with buckets of cold water; in this manner the diurnal cold bathing is continued until the eruptive fever comes on, which by such means is rather hastened, and commences about the close of the sixth day. Then during a few days of the *eruptive fever*, they desist from cold bathing; but on the pustular eruption appearing on the surface, which is generally a process of three days, they again resume the cold water, and continue it to the end of the disease. The variolous pustules when ripe are all opened with a pointed thorn. Every pustule is considered as a small abscess, or boil, that has reached maturation, and whose matter should be drained off by an external opening.

About a dozen pustules are opened with great gentleness at one time, when the matter is absorbed with a linen or cotton rag dipped in warm water and milk; in this way they proceed gradually over the whole body, face and extremities. A cooling regimen is prescribed through the disease; the inoculated are forbidden to confine themselves to the houses, and are exposed very freely to the air and wind; all the fruits of the climate are permitted such as plantain, sugar cane and watermelons; and cold water, or rice gruel used for common drink. The number of pustules from inoculation in India, are generally fifty to one hundred.

Mr. Holwell affirmed that the process was mild and that almost all the inoculated recovered. This same authority has observed a malignant form of small-pox in India, which killed numbers so early as the second or third day, and which attacked turkeys, capons, fowls, poultry, parrots and other species of the feathered tribe.

From the testimony of the Missionary Jesuits, it appears that inoculation was practiced in Pekin, China, only from about the middle of the seventeenth century.

The CHINESE METHOD OF SMALL-POX INOCULATION, was to roll up in cotton a few of the dried scabs, which had fallen off from the variolous pustules, and which were kept ready for use in a bottle close stopped with wax; small pledgets of these were put up the nostrils; or the dried scabs were powdered and snifted up the nose; and in this way the vascular muscous membrane of the nose the artificial disease was communicated.

In 1724, when a virulent small-pox was raging in Tartary, the Emperor of China dispatched the physicians of his court to inoculate the Tartars.

There appears to be no such similarity in the Chinese or East Indian modes of inoculation, as to induce one to refer them to the same origin.

The earliest information in BRITAIN of inoculation, and of its utility in diminishing the mortality of small-pox, was from Emanuel Timoni, a Greek physician, in a letter to Dr. Woodward, dated Constantinople, 1713.

In 1715, in another letter of Doctor Emanuel Timoni, to the Royal Society of London, he says that forty years before the above date, inoculation had been introduced into the capital of Turkey from two of the Asiatic provinces bordering on the Caspian Sea—Circassia and Georgia. An account of the Circassian practice may be found in Motraye's Travels to that country in 1712. Kennedy, another eye-witness of inoculation (Surgeon in the English Army), published in the same year with Timoni observations on the subject.

Pylarini's account of *Inoculation at Constantinople*, where he then practiced medicine, was published at Venice, 1715; in which year several thousand were inoculated in the Turkish capital. The Turks themselves, as Mahomedans and fatalists, rejected inoculation, and it was adopted only amongst the Greeks, Armenians and Christians. In Greece and the adjacent island of Candia it had been a practice during one or two centuries earlier. In Egypt, Tripoli, Tunis, Algiers, and other provinces of Africa subject to Turkey, inoculation had likewise been long known, and had extended so far south on the African Continent as the River Senegal.

It is stated that the Circassians and Georgians were induced to the practice of *Inoculation* by an additional and powerful motive to the security against small-pox, namely,—avarice, in order to preserve the beauty of their female children and to sell them at higher prices to the rich Turks and Persians as mistresses. The variolous matter they transferred by a small scratch made in different parts of the body, previously dipping the point of the needle into a ripe pustule, or in a nut-shell full of variolous infection. Many young women of Constantinople exercised the function of inoculators. Timoni says that they were indifferent whether the variolous infection was engrafted from natural or artificial pustules.

In 1717, the elegant and accomplished Lady Mary Wortley Montague, wife of the English Ambassador at Constantinople, had her son inoculated in that capital by Maitland, an English surgeon.

In 1725, Dr. Mead and Mr. Maitland made the experiment of Chinese inoculation upon one of seven condemned criminals in Newgate, and the Turkish practice upon the other six; all of whom by that means obtained a pardon from the King, and recovered; but in the first case the brain was seriously affected, and a prejudice was engendered against the Chinese method.

In 1722, on Lady Montague's return to England, her young daughter was inoculated by a slight incision on each arm, and was the first person of any rank inoculated in that country. A few months after the Prince Royal and some other members of the Royal Family were inoculated.

1722. In this year inoculation was carried to Boston, Massachusetts, North America, and was attended with the same favorable results as London, in the handful who had the resolution to entrust their lives to the protection.

Dr. Jurin, from 1723 to 1727, published several detached papers in the Philosophical Transactions comparing the mortality of natural small-pox and the numbers lost by inoculation. From a great mass of materials, a many thousands of sick in different parts of Europe, he found that *one*, *five*, or *six*, at a medium, died by the natural disease; for, in its malign

there is everywhere in different years various gradations, for in Turkey, in the northern parts of Europe, and in Africa, and throughout the whole extent of the Mediterranean coast, small-pox was still more fatal, and it has been in many outbreaks so violent as to kill nearly one-half of the infected.

Of those then inoculated, *one in fifty* died; but amongst them were included young infants, many of whom were cut off by convulsions, which was laid to inoculation, and some aged persons, pregnant women and valetudinarians. Jurin's list of all the inoculated in London and other parts of England, from 1721 to 1727, amounts to only seven hundred and sixty-four.

It is important to note in this connection, that in Wales a custom prevailed before the introduction of inoculation from Turkey, of engrafting the small-pox. A small wound or scratch was made on the hand or arm with a pin or a knife, and the variolous matter rubbed in; now and then the pocky scabs were merely rubbed in the hollow of the hands. A similar custom prevailed in some parts of Denmark in the fifteenth century, and is related by Bartholine.

Inoculation from 1727 languished in England and America until 1738, but *two* (2) died; in the same year, of *one thousand inoculated at all ages in one province of North America, namely, South Carolina*, and in the most unfavorable season, during the sultry heat of June, July and August, but eight (8) died.

Inoculation was first advocated in North America by the Reverend Cotton Mather, and was first practiced at his suggestion by Dr. Z. Boylston, on the twenty-seventh of June, 1721, in Boston, upon his only son, about thirteen years of age, and two negro servants, and was successful. During that year, or the early part of 1722, Dr. Boylston performed inoculation upon 247 persons.—*Thacher's American Medical Biography*, Boston, 1828, p. 28.

The havoc then made by small-pox, drove the inhabitants of Charleston, South Carolina, to adopt the only remaining remedy from destruction.

Middleton, in England, inoculated *eight* hundred and lost but one. Other inoculators lost one out of *three* and *four* hundred. In the West Indian island, St. Kitts, of three hundred negroes inoculated, only one died. Sanby inoculated a thousand in England and without a single death. In 1746 a small charitable hospitable was erected at Pancras, in the environs of London, for the double purpose of inoculation, and to receive during the sickness, persons of indigent circumstances who had been siezed with natural small-pox; of *eighteen hundred and ninety-six* inoculated in this hospital in the course of several years, but *eight* died. At another period, of *four hundred and ninety-six* inoculated at this asylum, but *one died.*

In the year 1759, the number inoculated at *Pancras* were, *five hundred and ninety three* (593), and many of these adults, yet but *one died.*

The *Suttons* in the seventeenth century, by their own computation, inoculated throughout London, and many parts of England, about *forty thousand*, and they assert they did not lose *one hundred.*

In Pennsylvania and other provinces of North America, of 8000 inoculated, only 19 died, or one in 467.

In 1748, inoculation was introduced into Amsterdam by Dr. Tronchin, who began experiments upon his own son, and before 1759, inoculation had spread into several other towns of Holland.

In 1774, a malignant small-pox was committing severe ravages in the ecclesiastical state of Italy, and several mothers dreading the destruction of their whole families, inoculated their children, when sleeping, with the desired success.

The efforts of a few physicians and patriots of France to introduce the inoculation failed, from the ignorant and bigoted opposition of the clergy and from 1724 to 1752, no person in the medical profession of France wrote upon inoculation; in 1754, the public attention in this country was awakened by Mr. Condamine's papers read before the Academy of Sciences, in vindication of inoculation, and in 1755 and 1756, a few of the principal nobility were inoculated at Paris.

In 1755, Mr. Shultz returned to Stockholm from London, where he had been sent, by order of the Swedish Court, to inquire into the success and mode of inoculation, particularly at the London Inoculating Hospital; and in that year a small building for a similar purpose was erected at Stockholm. Of 1200 inoculated in Sweden before the year 1764, not one died. Denmark adopted the practice about the same time with Sweden.

MORTALITY OCCASIONED BY THE INOCULATED SMALL-POX.

According to the immature calculations of Turin, of those inoculated *one* of *fifty*, and of Dr. Mead, *one* of *every hundred* died; but by the accounts of later date, collected by practical inoculators and physicians, on an average only *one* of *every five hundred* inoculated die, and it would seem from Mr. Holevill's statements, that this last rate of mortality would also apply to this practice in India.

In the London Small-Pox Hospital, of the last *five thousand* that were inoculated, only one in six hundred died.

THE PRACTICE OF INOCULATION FOR THE SMALL-POX, SUBSTITUTED A COMPARATIVELY MILD FORM OF THE DISEASE, ATTENDED WITH BUT SMALL MORTALITY; BUT THE TOTAL NUMBER OF DEATHS BY SMALL-POX WAS THEREBY INCREASED, AND THE PERPETUATION AND SPREAD OF THIS LOATHSOME PESTILENCE ON THE SURFACE OF THE EARTH, WAS PROMOTED BY INOCULATION.

Inoculation seldom or never fails to convey the disease; the pustules are in general few, and although only one or two should appear, the person is protected against the small-pox.

Exclusive of the immediate havoc by small-pox in the natural way, numbers who survive are disfigured for life; in multitudes of others, the natural disease is followed by phthisis and scrofula, and a considerable number are deprived of eye-sight.

Dr. W. Black* writing in 1781, says: "Others surmised, that infection

*Observations, Medical and Political, on the Small-pox, etc.: London, 1781, p. 41.

d hereditary diseases might be instituted together with variolous infec- n. Universal experience proves there to be chimerical conjectures, and in e natural disease there is greater danger of such imaginary combination of fections; for in chosing variolous matter it is easy to select it from healthy stitutions. Experiments have been made with variolous matter taken m persons laboring at the same time under the venereal disease, yet the ter affection was not engrafted with inoculated small-pox. The true rvy, however virulent, every common seaman knows, is neither conta- us nor infectious, neither is the scrofula."

The London bills of mortality show that within one hundred years pre- ling 1780, in this city alone upwards of two hundred thousand people l been cut off by one single disease—small-pox. An examination of the ndon bills of mortality as far back as 1629, when the different diseases those who died were first inserted, show that in all the interval extend- to 1780, the deaths from small-pox in any one year did not exceed four usand; in 1772, which yielded the heaviest mortality from this disease, y numbered 3992; and it was calculated that about two thousand inhabi- ts were annually destroyed in London by the small-pox. If in the teenth century, during the practice of inoculation and before the intro- tion of vaccination, the six hundred thousand inhabitants of London two thousand annually by small-pox, then throughout the *nine millions* Britain and Ireland, *thirty* thousand annual deaths should be attributed mall-pox.

n the hundred years preceding the introduction of vaccination, during least sixty of which inoculation was practiced, Britain and Ireland e lost three millions of inhabitants by small-pox.

aron Dimsdale, who was sent from England to inoculate the Czarina Russia, in his treatise on small-pox, says that "*this single disease destroys e than the eighth part of the inhabitants.*

If, therefore, in London, which enjoys the many advantages already re- l, more than *two thousand persons die annually of small-pox*, we may ly suppose that the loss which Russia in its whole extent sustains in *same space of time*, amounts to *two millions of souls.*" P. 16.

he learned Dr. W. Black, however, on more careful calculation, founded n the best data accessible at that time (1780), estimating the total pop- ion of Europe at 120,000,000, taking Britain and Ireland as a body, "*the al deaths by small-pox*, throughout all the kingdoms of Europe, will unt to only *four hundred thousand.*"*

uring the practice of inoculation a question of great importance to kind was agitated, namely, whether by inoculation in London and great cities, at the private houses of the inhabitants, contagion is nore likely to be dispersed, and, upon the whole, the community at more injured than benefited by the practice?

e arguments urged chiefly by Baron Dimsdale and other English rs, during the latter part of the eighteenth century, may thus be con- d.

ough the loss under inoculation is very inconsiderable, *almost the whole* ose that are inoculated recovering, yet by spreading the disease, a

rvations Medical and Political on the Small-pox, etc., 1781, p. 50.

greater portion take it in the natural way; *more lives are now* (1725–1780) lost in London than *before inoculation commenced*, and the community at large sustains a greater loss; the practice, therefore, is more *detrimental* than *beneficial* to society.

In the four years preceding 1776, the number of bills from small-pox were at a medium to 2,444, an alarming increase.

The disease, by general inoculation throughout London, spreads by visitors, strangers, servants, washerwomen, doctors and inoculators; by means of hackney coaches, in which the sick are sent out to take the air, or by sound persons communicating with the sick in the streets.

The poor in London are miserably lodged; their habitations are in close alleys, courts, lanes and old dirty houses; they are often in want of medicines, even of bedding. The fathers and mothers are employed constantly in laborious occupations abroad, and cannot attend the inoculated sick; should they neglect their occupations, food and necessaries would be deficient, and the medicines and diet ordered by the physicians could not be regularly complied with. The air in their houses is impure, they have neither areas, gardens, or carriages for the convenience of ventilation and taking fresh air.

Sailors and sea-faring people, many of whose lodgings are miserable in the little houses on the river, are liable to catch the distemper, and either to fall sick there without friends or assistants; or, perhaps, being infected on shore, to carry it to sea in their contaminated clothes, and afterwards falling sick without care or attendance spread the disease in foreign climates.

Country people coming to town for markets, visits, or pleasure, all are subject to the danger of the infection.

Persons going from the sick to the General Inoculating Hospital, or Dispensories, for medicines or advice, scattered the disease in their infected clothing in the streets and whole neighborhood.

The gossiping disposition of the poor, the flocking of persons to funerals of those dead with the small-pox, and the sick sallying forth in the public ways in their dirty garments loaded with small-pox infection, scattered the disease broadcast. The children who were able to run about, immediately upon their recovery, still farther scattered the seeds of the fatal disease by intermingling in the streets and in the schools with their play-fellows.

The success, therefore, derived from general inoculation was beneficial to a comparatively few only; whilst it misled a great number of others into danger to which they would otherwise have been less exposed.

THE MORTUARY STATISTICS OF LONDON DEMONSTRATE THAT INOCULATION ACTUALLY INCREASED THE MORTALITY FROM SMALL-POX.

On the continent registers were instituted fifty or a hundred years before their introduction in England; but general annual registers of births, diseases and deaths are modern establishments, and were unknown to the ancients.

In 1538, exact records of weddings, christenings and burials, were first ordered by the King and Council to be kept in every parish and church in England by either the vicar or the curate. This order was very negligently obeyed in many parishes, until 1759, in Queen Elizabeth's reign

when to prevent registers from rotting in damp churches, they were directed to be written on parchment. At first, they seem, both in Germany and in England, to have been designed to prove the birth, death and descent of private persons, and the rights of inheritance in property or lands. In 1592, a year of pestilence, bills of mortality for London were instituted; but were discontinued till 1603, another year of desolating pestilence, which was the only distemper then taken notice of in the printed reports. In 1629, the different diseases, casualties of those who died, together with the distinction of sexes were added and published; and in 1728, and not sooner, the different ages of the dead were ordered to be specified in the London bills. Upon first establishing the distinction of diseases and casualties in the bills of the metropolis of England, the primary intention appears to have been to discern the numbers destroyed by the plague, and to detect concealed murders.

Since the days of Moses, however, existence has been circumscribed within the same narrow bounds. In the London bills of mortality, during a period of thirty years, that is, from 1728 to 1758, the total deaths amounted to 750,422, and of this number 242 only reached beyond 100 years of age; one of whom arrived at the age of 138.

Dr. W. Black* has recorded the following statistics illustrating the annual average births and burials recorded in London bills from 1671 to 1781:

LONDON BILLS AT A MEDIUM ANNUALLY.

YEARS.	Christenings.	Burials.
From 1671 to 1681	12,325	19,144
From 1681 to 1691	14.439	22,763
From 1691 to 1700	14,938	20,770
From 1700 to 1705	15,750	21,091
From 1706 to 1710	15,489	21,832
From 1711 to 1715	16,204	22,178
From 1716 to 1720	18,019	25;641
From 1721 to 1725	18,828	26,513
From 1726 to 1730	17,578	28,472
From 1731 to 1735	17,517	25,491
From 1736 to 1740	16,145	27,494
From 1741 to 1745	14.419	25,351
From 1746 to 1750	14.490	25,351
From 1751 to 1756	15,119	21,080
From 1759 to 1768	15,710	22,956
From 1770 to 1780	17,218	21 000

From the preceding table it appears that the mortality in London was great from 1617 to 1750, and comparatively low, considering the increase of population, from 1751 to 1780.

That this apparent improvement in the health and diminution in the mortality of London was not due to inoculation is conclusively shown by the following statistics:

Deaths from small-pox in London during fifteen years beginning from 1701 and ending with 1716, before the introduction of inoculation..... 22,219

Deaths from small-pox in London during fifteen years, 1717 to 1731, during and after the introduction of inoculation..... 34,448

Deaths from small-pox in London, fifteen years, 1732 to 1746, during inoculation..... 29,462

Deaths from small-pox in London, fifteen years, 1747 to 1761, during inoculation..... 29,165

Deaths from small-pox in London during fifteen years, 1762 to 1776, during inoculation..... 36,276

* Observations, etc., on Small-pox, p. 158, p. 196.

During the preceding fifteen years before the introduction of inoculation the deaths from small-pox reached only 22,216, whilst after its introduction in similar periods of time they ranged from 29,169 to 36,276, the highest number occurring in the last series of fifteen years.

THE ADVANTAGES OF COW-POX INOCULATION (VACCINATION) DEMONSTRATED BY OFFICIAL RECORDS AND STATISTICS.

In order to place this subject in a clear and impregnable position, we quote from official reports and records.

We extract the following from the valuable *Report of the House of Commons rpon Dr. Jenner's Claim.*

"As a comparison between this new practice and the inoculated small pox, forms a principal consideration in the present inquiry, some facts with regard to the latter engaged the attention of your committee; and they have inserted in the appendix statements of the mortality occasioned by the small-pox in forty-two years before inoculation was practiced in England, and from the forty-two years, from 1731 to 1772, the result of which appears to be an increase of deaths, amounting to seventeen in every 1,000 the general average giving seventy-two in every 1000 during the first forty two years, and eighty-seven in the forty-two years ending with 1772, so as to make the whole excess of deaths in that latter period 1742. The increase of mortality is stated by another witness to be as ninety-five to seventy comparing the concluding thirty years with the first thirty years of the last century, and the average annual mortality from small-pox to have been latterly about 2000; for although individual lives are certainly preserved and it is true that a smaller loss happens in equal numbers who undergo the small-pox now than there was formerly, yet it must be admitted, that the general prevalence of inoculation tends to spread and multiply the disease itself; of which, though the violence be much abated by the modern mode of treatment, the contagious quality remains in full force. It deserves also to be noticed, that the deaths under the inoculated sort of small-pox, with all the improvements of modern experience, are not inconsiderable. It is stated by one of the witnesses at about one in every 30 throughout England; by another as about one in every 100 in London while the loss in the natural small-pox is probably not less than one in six.

The following statement was subjoined to the Report of the House of Commons, illustrating the beneficial effects of vaccination.

"For this purpose we shall state the number of deaths by small-pox from the bills of mortality of parish clerks of London, during the twelve years since vaccination was introduced, viz., from January 1799, to January 1, 1811, and also during the twelve years immediately preceding the vaccine practice, viz., from January 1, 1787 to January 1799. But in order to judge more accurately, we shall arrange the two periods of twelve years under three heads, each comprehending four years. This distribution affords the underwritten tables:

1. Deaths by Small-pox preceding vaccination in the first four years:			2. Deaths from Small-pox, during the Vaccine Practice in the first four years:		
1	In 1787	2418	1	In 1799	13
2	In 1788	1101	2	In 1800	24
3	In 1789	2077	3	In 1801	14
4	In 1790	1617	4	In 1802	13
	Total	7213		Total	68

Deaths from Small-pox in the second four years preceding Vaccination:			Deaths from Small-pox in the second four years after the institution of the Vaccine practice:	
In 1791	1747	1	In 1803	1202
In 1792	1568	2	In 1804	622
In 1793	2382	3	In 1805	1685
In 1794	1913	4	In 1806	1158
Total	7610		Total	4667

In the third four years:			In the third four years:	
In 1795	1040	1	In 1807	1297
In 1796	3548	2	In 1808	2257
In 1797	522	3	In 1809	1163
In 1798	2237	4	In 1810	1198
Total	7547		Total	5915

total number of deaths by Small-pox in 12 years previous to inoculation	22,170
to, subsequent to vaccination	17,142
Decrease	5,028

From the preceding statistics it appears that the number of deaths from Small-pox in the first twelve years exceed the number in the twelve succeeding years during vaccination by 5,028: or 419 persons *per annum* fewer for twelve years died since than before vaccination.

The progressive increase of the population during the period under observation should also be taken into the calculation. The absolute increase of the population of England from 1801 to 1811 was *one million, six thousand and fifty-four*, or about eleven in 100; or setting aside the increase of the army and navy, the population of England increased 14½ *per cent*, Wales and Scotland 13 *per cent.*

The following statistics, derived from authentic sources, illustrate in the clearest manner the power of vaccination and re-vaccination to prevent Small-pox and to diminish the sum of disease, suffering, and death, and to promote the longevity of the human race

TABLE SHOWING THE COMPARATIVE MORTALITY FROM SMALL-POX IN LONDON DECENNIAL PERIODS BEFORE THE DISCOVERY OF INOCULATION DURING THE PRACTICE OF INOCULATION, AND UNDER VACCINATION.

PERIODS.	Mean Annual Small-pox deaths. Per 1000.	Comparative Numbers.	
1[illegible]30	48		
1[illegible]30	36		
1[illegible]0	71	56	No protection.
1[illegible]0	74		
1[illegible]0	51		
1[illegible]30	100		
1[illegible]0	108		
1[illegible]0	98	96	Inoculation.
1[illegible]0	87		
1[illegible]0	88		
1[illegible]0	42		
1[illegible]0	32		
1[illegible]0	23	25	Vaccination.
1[illegible]0	18		
1[illegible]0	12		

[illegible]mentary Return, 26th April, 1853. Vaccination, its Value and Alleged Dangers, etc., by Edward [illegible]: London, 1868, pp. 273 to 391.

TABLE SHOWING THE ANNUAL DEATHS FROM ALL CAUSES AND FROM SMALL-POX IN LONDON FOR DECENNIAL PERIODS, FROM 1751 TO 1860. (1).

PERIODS.	Average All Causes.	Annual Deaths Small-Pox.	Small-Pox Deaths per 1000 Deaths From All Causes.
1751–60	20,872	2,061	100
1761–60	23,202	2,445	108
1771–70	22,404	2,204	98
1781–90	19,516	1,705	87
1791–1800	20,213	1,780	88
1801–10	19,582	1,253	64
1811–20	18,604	793	42
1821–30	21,645	699	32
1831–40	24,585	573	23
1841–50	52,217	841	16
1851–60	61,047	715	11

TABLE SHOWING THE PROPORTION OF DEATHS FROM SMALL-POX IN PRAGUE, DURING SEVEN YEARS PRIOR TO THE INTRODUCTION OF VACCINATION, AND TWENTY-FOUR YEARS SUBSEQUENT TO THE INTRODUCTION OF VACCINATION. (2).

	Years 1792–1806, 7 Years Prior to Introduction of Vaccination.	Years 1832–1855, 24 years Subsequent to the Introduction of Vaccination
Proportion to Population of death generally	1 to 32	1 to 32⅓
Death from Small-pox to population	1 to 396⅔	1 to 14,741⅓
Deaths from Small-pox to total number of deaths	1 to 12⅓	1 to 457⅔

TABLE* SHOWING THE NUMBER OF DEATHS IN ENGLAND FROM EACH OF CERTAIN ZYMOTIC DISEASES IN EACH OF THE TWENTY-THREE YEARS FOR WHICH THE RECORD HAS BEEN MADE.

YEARS.	Scarlatina.	Diphtheria.	Measles.	Whooping Cough	Small-Pox	Fever.	Diarrhœa, Dysentery and Cholera.
1838	5802	.....	6514	9107	16268	18775	3440
1839	10325	.....	10937	8165	9131	15666	3493
1840	19816	.....	9326	6132	10434	17177	4799
1841	14161	.....	6894	8099	6368	14846	4198
1842	12807	.....	8742	8091	2715	16201	7622
1847	14697	.....	8690	9260	4227	30994	15630
1848	20502	.....	6867	6862	6903	22037	15604
1849	13111	.....	5464	9615	4645	18347	74155
1850	13370	.....	7080	7770	4666	15375	14400
1851	13594	40	9370	7905	6997	17930	18045
1852	18813	74	5846	8022	7320	18641	21754
1853	15653	46	4894	11200	3151	18554	20502
1854	18325	203	9277	9770	2808	18893	42092
1855	17128	186	7354	10185	2525	16470	15044
1856	13931	229	7124	9225	2277	16182	15912
1857	13919	310	5969	10138	3936	19016	24037
1858	25481	1836	9271	11648	6460	17882	16004
1859	19907	9587	9548	8976	3848	15877	20597
1860	9681	5212	9557	8555	2749	13012	11185
1861	9077	4517	9055	12309	1320	15440	20999
1862	14834	4903	9800	12272	1628	18721	12667
1863	30475	6507	11349	11275	5964	18017	16801
1864	29700	5404	8323	8570	7684	20106	18368

Note (1).—Report of the Small-pox and Vaccination Committee of the Epidemiological Society, p. 4; Handbook of Vaccination, by Edward C. Seaton, M. D., Medical Inspector to the Privy Council, London 1868. pp 422-424.

Note (2).—Mr. Simon's Report and Papers relating to the History and Practice of Vaccination, 1857, p. 162.

Vaccination, etc., Edward Ballard, p. 378.

*Eighth Report of the Medical Officer of the Privy Council, 1865; presented pursuant to Act of Parliament; London, 130, p. 38.

ABLE SHOWING THE ANNUAL MORTALITY FROM SMALL-POX IN ENGLAND, WITH THE PROPORTION OF DEATHS TO POPULATION AND TOTAL MORTALITY, FROM 1838 TO 1865, INCLUSIVE.*

YEAR.	Population.	Deaths From All Causes.	Deaths From Small-pox.	Deaths from Small-pox per One Million of Population.	Deaths from Small-pox per 1000 Deaths from all Causes.	Place Occupied by Small-pox in the Order of Mortality in the Causes of Deaths in England.
38	15,312,256	342,529	16,268	1,101	47.96	5th
39	15,515,296	338,979	9,131	604	26.93	10th
40	15,721,029	339,561	10,434	679	29.00	9th
41	15,929,492	343,849	6,368	408	18.51	14th
42 (1)	16,123,793	349,519	2,715	172	7.76	25th
47 (1)	17,131,512	420,304	4,227	246	10.05	22d
48	17,340,492	398,521	6,903	398	17.32	16th
49	17,552,020	440,839	4,644	264	10.53	20th
50	17,766,129	368,995	4,665	263	12 90	19th
51	17.982.849	395,396	6,997	396	18.00	15th
52	18,205,627	407,135	7,320	409	18.28	17th
53	18,403,313	421,097	3,151	174	7.60	26th
54	18,618,760	437.905	2,808	153	6 49	29th
55	18,786.914	425,703	2,525	136	6.01	34th
56	19,045.187	390,506	2,277	121	5.90	35th
57	19.304,897	419,815	3,936	206	9.48	24th
58	19,523,103	449,656	6,460	335	14 54	18th
59	19,746,000	440,781	3,848	197	8.84	26th
60	19,902,713	422,721	2,749	140	6 59	35th
61	20,119,314	435,114	1,320	66	3.06	46th
62	20,336.467	436,566	1,628	81	3.77	39th
63	20,554,237	473,837	5,964	293	12.70	21st
64	20,772,308	495,531	7,684	373	15.64	18th
65	20,990,946	490,909	6,411	309	13.20	21st

Table showing the annual mortality from small-pox in England and in London at three periods, viz:

1. Before the enactment of any vaccination laws.
2. After vaccination was provided gratuitously.
3. Since vaccination has been made obligatory by statute.†

DEATHS FROM SMALL-POX IN ENGLAND.

1. Before the Enactment of any Vaccination Laws.		2. Vaccination Provided Gratuitously but not made Obligatory.		3. Vaccination to a Certain Extent made Obligatory.	
Years.	Deaths.	Years.	Deaths.	Years.	Deaths.
1	16,268	1841	6,368	1854	2,808
1	9,131	1842 (1)	2,715	1855	2,525
1	10.434	1847 (2)	4,226	1856	2,277
		1848	6,903	1857	3,936
		1849	6,645	1858	6,460
		1850	6,666	1859	3,808
		1851	6,897	1860	2,749
		1852	7,320	1861	1,320
		1853	3,151	1862	1,628
				1863	5,964
erage annual deaths om Small-pox	11,944		5,221		3,351

om Reports of Registrar General of England.

From 1843 to 1846, inclusive, the causes of deaths were not analyzed by the Registrar General.—Hand-of Vaccination; Edward C. Seaton, M. D.; p. 422.

egistrar General's Report.

nalysis of Deaths from 1843 to 1846, inclusive, not given in Registrar Report on Vaccination; by Edward d; p. 379.

DEATHS FROM SMALL-POX IN LONDON.

1. Before the Enactment of any Vaccination Laws.		2. Vaccination Provided Gratuitously, but not made Obligatory.		3. Vaccination to a Certain Extent made Obligatory.	
Years.	Deaths.	Years.	Deaths.	Years.	Deaths.
1838	3,817	1841	1,053	1854	694
1839	634	1842	360	1855	1,033
1840	1,235	1843	438	1856	531
		1844	1,804	1857	156
		1845	909	1858	242
		1846	257	1859	1,158
		1847	955	1860	898
		1848	1,617	1861	217
		1849	518	1862	345
		1850	498	1863	2,012
		1851	1,066	1864	537
		1852	1,159	1865	646
		1753	211	1866	1,388
Average annual deaths	1,859		826		758

The diminution of the deaths from small-pox in London, during the period specified (1838–1866, 29 years) took place in a constantly and rapidly increasing population. In the years 1840-41, the annual deaths from small-pox in the metropolis was 616, out of every million persons living, at all ages; from 1841 to 1850 there were in the mean population 389 per million; from 1851 to 1861, 272 per million.

*Table Showing the Difference between the Mortality from Small-Pox in England and Ireland, during a Period in which there was no Law Compelling Vaccination, and that in Countries where Vaccination is More or Less Compulsory.**

Mortality in Various Places in England, Scotland and Ireland from Small-pox, as Compared with the Total Mortality for ten years, 1850–1851.		Mortality from Small-pox, in Various Countries in Which Vaccination is Directly or Indirectly Compelled, as Compared with the Total Mortality.	
PLACES.	Deaths from Small-pox per 1000. Deaths from All Causes.	PLACES.	Deaths from Small-pox per 1000 Deaths from All Causes
London	16.0	Westphalia	6.0
Birmingham	16 6	Saxony	8 33
Leeds	17.5	Renish Provinces	3.75
Paisley	18 0	Prussian Silesia	5.25
Edinburgh	19.4	Pomerania	7.75
Liverpool	21.0	All Prussia	7.5
Dundee	24.2	Lower Austria	6.0
Perth	25.0	Trieste	5.15
Greenock	34.6	Bohemia	2.0
Glasgow	36.0	Lombardy	2.0
Dublin	25 66	Venice	2.2
Cork	39.5	Sweden	2.7
Galway	35.0	Bavaria	4.0
Limerick	41 0		
Connaught ten years, ending 1841	60.0		
All Ireland, ditto	49.0		
England and Wales (eight years)	21.9		

*From Parliamentary Return, April 26, 1853.

Mortality of Small-Pox in Copenhagen for a Period of 100 *Years before Inoculation, during Inoculation, and during Vaccination,* 1750–1850.

YEAR.	Remarks and Population.	Died of Small-Pox.	YEAR.	Remarks and Population.	Died of Small-Pox
750	60000	1457	1803	Commission recognize protective power of vaccination	
751		80	1804		13
752		113	1805		5
753		53	1806		5
754	Inoculation introduced	9	1807		2
755	Inoculation Hospital founded	1117	1808		46
756		125	1809		5
757		13	1810	Decree ordering vaccination	
758		13	1811	promulgated	4
759		1079	1812	100975	
760	Inoculation Hospital closed.	118	1813		0
761		4	1814		0
762		7	1815		0
763		167	1816		0
764		480	1817		0
765		138	1818		0
766		42	1819		0
767		6	1820		0
768		27	1821		0
769	70495	1219	1822		0
770	Inoculation Establishment introduced	22	1823		0
771		8	1824		41
772		22	1825	Vaccination placed under control Board of Health.	12
773		190	1826		29
774		116	1827		4
775		276	1828		1
776		86	1829		29
777		7	1830		3
778		270	1831		0
779		283	1832		3
780		98	1833	Revaccination general.	19
781		174	1834	119292	26
782		332	1835		434
783	Inoculation Establishment closed	123	1836	119591	81
784		77	1837	Revaccination ordered for the army	1
785		427	1838		2
786		193	1839		0
787		136	1840		2
788		185	1841		0
789		323	1842		35
790		140	1843		111
791		297	1844	Revaccination ordered for the navy	83
792		155	1845	126787	7
793		139	1846		0
794		452	1847		0
795		248	1848		2
796	83604	357	1849		7
797		423	1850	129695	0
798		386			
799		45			
800	Vaccination first introduced, 91631 2	35			
801	Vaccination Establishment erected	486			
		73			

Ir. Simon's Report (Papers Relating to the History and Practice of ccination, p. 171. Vaccination, Edward Ballard, M. D., p. 375).

*Table Showing for Several Centuries the Death Rate from Small-Pox during a Period prior to the Introduction of Vaccination and since the Introduction of Vaccination.**

Sums of Years Respecting Which Particulars are Given.	TERRITORY.	Approximate Average Annual Death Rate per Million of Living Population.	
		Before Introduction of Vaccination.	After Introduction of Vaccination.
1777–1806 and 1807–1850	Lower Austria	2,484	340
1777–1806 and 1807–1850	Upper Austria and Saltzberg	1,421	501
1777–1807 and 1806–1850	Styria	1,052	446
1777–1806 and 1807–1850	Illyria	518	244
1777–1806 and 1807–1850	Trieste	14,046	182
1777–1806 and 1807–1850	Tyrol and Voralberg	911	170
1777–1806 and 1807–1850	Bohemia	2,174	215
1777–1806 and 1807–1850	Moravia	5 402	255
1777–1806 and 1807–1850	Gallicia	1,194	676
1777–1806 and 1807–1850	Austrian Silesia	5,812	198
1787–1806 and 1807–1850	Bulkorania	3,527	516
1817–1850	Dalmatia	.....	86
1817–1850	Lombardy	.....	87
1817–1850	Venice	.....	70
1831–1850	Military Frontiers	.....	288
1776–1780 and 1810–1850	Prussia (Eastern Provinces)	3,321	556
1780 and 1816–1850	Prussia (Western Provinces)	2,272	356
1780 and 1816–1850	Posen	1,911	743
1776–1780 and 1810–1850	Brandenburgh	2,181	181
1776–1780 and 1816–1850	Westphalia	2,613	114
1776–1780 and 1816–1850	Rhenish Provinces	908	90
1781–1805 and 1810–1850	Berlin	3,422	176
1776–1780 and 1816–1850	Prussian Saxony	719	170
1780 and 1810–1850	Pomerania	1,774	136
1810–1850	Prussian Silesia	.....	310
1774–1801 and 1810–1850	Sweden	2,050	158
1751.1800 and 1801–1850	Copenhagen	3,128	286

Table Showing the Relative Fatality of Small-Pox When it Affects the Unvacinated and Vaccinated.†

Places and Times of Observation.	Total Number of Cases Observed.	Death Rate per 100 Cases.	
		Among Unvaccinated.	Among the Vaccinated.
France, 1816–41	16,397	16⅛	1
Quebec, 1819–20	2	27	1⅛
Philadelphia, 1825	140	60	0
Canton Vaud, 1828–9	5,838	24	2 1–6
Durkehmen, 1828–9	134	18 4–5	0
Verona, 1828–39	909	46⅜	5⅛
Milan, 1830–51	10,240	38⅓	7⅛
Boston, 1831–33	220	53 4–5	2 1–9
Wirtemberg, 1831½–5½	1,442	27⅓	7 1–10
Carniola, 1834–5	412	16¼	4 2–5
Vienna Hospital, 1834	360	51¼	12½
Carinthia, 1834–5	1,626	14⅛	⅛
Adriatic, 1835	1,002	15 1–5	2 4–5
Lower Austria, 1835	2,287	25 4–6	11⅛
Bohemia, 1835–1855	15,640	29 4–5	5
Gallicia, 1836	1,059	23⅛	5 1–7
Dalmatia, 1836	723	19⅜	8¼
London Small-pox Hospital, 1836–56	9,000	35	7
Vienna Hospital, 1837–66	6,213	30	5
Kiel, 1852–3	218	32	6
Wirtemberg, no date	6,258	38 9–10	3⅛
Malta, no date	7,570	21 7–100	4 2–10
Epidemiological Society returns	4,624	19 7–10	2 9–10

*Mr. Simon's Report; Papers relating to the History and Practice of Vaccination, 1857, p. 23.

†Papers relating to the History and Practice of Vaccination, p. 27.

The statistics relating to the effects of vaccination in reducing in a marked manner the mortality from small-pox in various countries, will be still farther extended and enlarged, under the subsequent division of this inquiry, relative to the history of the cow-pox, and the introduction of vaccination into the various states of the American Union.

The following conclusions and general results may be deduced from the preceding statistics.

1. *In every country in which the practice of vaccination has been adopted there has been a marked reduction of the mortality from small-pox.*

In times preceding the introduction of vaccination, small-pox was the terror of princes and the fierce unconquerable slayer of the people; and although its nature has lost none of its cruel and destructive attributes, it has been so effectually guarded that none need fear its attack, but those who neglect vaccination.

It is estimated that prior to the commencement of this century, out of every million of the population of England, 3000 persons annually fell victims to small-pox; during the ten years 1851, to 1860, the mean population of England and Wales was 18,996,916 persons; during the ten years, 42,071 individuals died of small-pox, which is in a ratio of 2214 per million of population for this whole period, or only 221. 4 on the average annually; therefore small-pox has been more than ten times less fatal to the people of England, than it was when vaccination was not known.

2. *The practice of inoculation promoted the spread of small-pox and increased the mortality from this disease.*

In London, during the latter halt of the seventeenth century, when inoculation was not practiced, the death-rate from small-pox ranged from thirty-six to seventy-four per 1000 of all the deaths that took place, the mean being fifty-six; during the second or *inoculation* epoch, it ranged from eighty-seven to 108 per 1000, the mean being ninety-six; and during the third or *vacciation* epoch, it has ranged from twelve to forty-two per 1000, the mean being twenty-five.

In Copenhagen in 1750, with a population of 60,000, 1457 deaths occurred from small-pox; in 1755, 1117 deaths; in 1759, 1079 deaths; in 1769, with a population of 70,000, small-pox occasioned 1219 deaths.

Vaccination was introduced into Denmark, in the year 1801; and during the ten years preceding there occurred in Copenhagen alone 2546 deaths from small-pox, which becoming more prevalent in 1801, carried off in that year 486 of the inhabitants of the city. From 1802 to 1810 inclusive, in the course of the nine years succeeding the introduction of vaccination, small-pox occasioned only 158 deaths; and from this latter year until 1824, although the population had risen to above 100,000 not a single death from small-pox was recorded.

Vaccination appears to have been introduced in Prussia in 1801, and in 1803, *inoculation for small-pox*, was prohibited; before the introduction of vaccination, 40,000 persons were said to die annually of small pox within the Prussian domains; in 1817, notwithstanding an extension of territory, but of 306, 728 deaths only 2940, were occasioned by small-pox; and this result was clearly due to the extensive practice of vaccination, the number of vaccinations far exceeding the number of births.

In the department of Breslau, in 1818, out of a population of 510,617 persons, 17,629 were successfully vaccinated; and although during this year small-pox was introduced at nine different places, only twenty-eight persons took the disease, and only six persons died of it.

Vaccination was introduced in the principality of Ansprach, in Bavaria, in 1801, and in 1807 regulations for public vaccination and the suppression

of small-pox was promulgated by the Government, which were rendered still more stringent in 1808. In this principality, with a population of 266,406 individuals, three perished from small-pox during the years 1797-98-99, on an average an annual number of 500 persons, and in the single year 1800, no less than 1609 persons. In the year 1807, 500 cases and fifty deaths from small-pox occurred. In this year under the new regulations, 31,880 persons were vaccinated, and during this and the subsequent years, altogether 141,755, persons underwent the operation.

In the year 1808, only eight cases of small-pox, and one death occurred; in the year 1809, only eleven cases and four deaths; and from this time to 1818, only four cases, every one of which recovered. And yet during these three years small-pox was prevailing epidemically in the adjoining kingdoms of Wurtemburg, where vaccination was not enjoined until 1818.

According to Mr. Hendricks:* in Sweden, from the year 1749 to 1801, the proportion of small-pox varied from 1.2 per cent in 1786, to 25.16 per cent in 1779; in three years PRIOR TO THE PRACTICE OF VACCINATION, the small-pox deaths was under 1 per cent of all deaths in *no one* year; from 5 and under 10 per cent of all deaths in twenty-two years; 10 to 20 per cent in seventeen years; and 20 per cent in two years. DURING THE VACCINATION PERIOD, from 1802 to 1855, the proportion of deaths from small-pox varied from *no deaths* in 1846, to 343 per cent of the deaths from all causes is 1881. During this the vaccination period, the small-pox deaths were under 1 per cent, of all deaths in thirty-three years, from 1 and under 2 per cent in nine years 2 per cent and under 3 per cent in ten years; 3 per cent and under 4 per cent in two years, over 4 per cent in no one year.

It is also shown by the statistics of a large number of European States, collected by Dr. Seaton from the statistics of the Epidemiological Society (recalculated by Mr. Simon), that the mortality from small-pox per million of population has been vastly reduced since the introduction of vaccination. Thus the small-pox mortality in Trieste during the vaccination period has been seventy-five times less than it has been before, in Moravia twenty-one times less, in Silesia twenty-nine times less, in Westphalia, twenty-five times less, in Berlin nineteen times less, in Sweden thirteen times less, in Lower Austria seven times less, and, in Copenhagen eleven times less.

3. *The mortality from small-pox has been least in those States, and places where the most complete arrangements have been in force for bringing the entire population under the protective influence of the vaccine disease; and when in the same county or localities the regulations for the enforcement of public vaccination have been more strict at one period than at another, and when this has been more actively carried out at one time than at another, the mortality of the population from small-pox has receded as the vaccination of the masses has been more perfectly ensured.*

4. *The evidence is conclusive that the vast majority of mankind may, by a single properly perfected vaccination, be rendered wholly unsusceptible of any subsequent action of the variolous poison; and that in the minority, where susceptibility to small-pox infection has not been entirely exhausted by the vaccine process, the disease will with rare exceptions be so modified as to be but rarely attended with severe or fatal effects.*

Vaccination, without endangering the life of the individual submitted to it, and without diffusing any infection, entirely and permanently exhausts the susceptibility to small-pox in the vast majority of those in whom it has been properly performed; but leaves an undetermined proportion still

* Vital Statistics of Sweden from 1749 to 1856,—Statistical Journal, 1862, Vol. 25, p. 142.

subject in a greater or less degree to the action of the variolous poison. In those where susceptibility has been only partially destroyed, the action of the variolous infection may be manifested at any period, from a few weeks or months to any number of years, after the performance of the vaccination; but it is most frequently not manifested till after puberty, and when manifested before puberty is generally inconsiderable in degree and only quite exceptionally fatal. The degree of severity which post-vaccinal small-pox may manifest after purbety is chiefly determined by the perfection of character and sufficiency of amount of the vaccination that has been performed; even when the vaccination has been the most imperfect, leaving but a single mark of indifferent character, the disease is still in most instances modified in its course, and is not fatal in one third the proportion of cases in which natural small-pox is fatal; but when the vaccination has been done in the best manner, the modification is so great and so general that the proportion of deaths to attacks is scarcely more than the seventieth part of that which occurs in the natural disease. It is therefore a matter of vital importance that the vaccination should always be done in the best known manner. *

5. *Revaccination should be performed on all persons after puberty; and in all cases irrespective of the age (before or after puberty), when the vaccination has been imperfect in character, spurious, irregular, or disturbed in its normal course.*

After successful revaccination, small-pox, even of the most slight or modified form, is rarely met with. Thomas Heim found that in five years there occurred among 14,384 revaccinated soldiers in Wurtemberg not one instance of varioloid, and among 30,000 revaccinated persons in civil practice only two cases of varioloid occurred, although during three years small-pox had prevailed in 344 localities, producing 1,673 cases of modified and unmodified small-pox among the not revaccinated and in part not vaccinated population of 363,298 persons in those places in which it had prevailed.

In the Prussian Army, since the introduction of systematic revaccination in 1839, the cases reported as "varioloid," and, still more, those called "variola," have been nearly all of them among that portion of recruits whose turn for revaccination had never come, on whom revaccination had not been successful, or who were incubating small-pox when they were revaccinated; in the twenty years which immediately succeeded the adoption of this system there occurred altogether but forty deaths from small-pox in this large army—or an average of two deaths per annum—only four of the entire forty being in persons said to have been successfully revaccinated.

In the Bavarian Army, in which there had been compulsory revaccination since 1843, there had not from that date up to the time of a report made to the Minister of War, in 1855, been a single case of unmodified small-pox, and only a very few cases of modified small-pox without any deaths.—*Simon's Papers Relating to Vaccination, pp.* 35-36. *Seaton's Hand-book of Vaccination, pp.* 268-273.

Mr. Marson has recorded the fact, that during the period of his connection with the Small-pox Hospital, not one of the nurses or servants had taken the small-pox during her residence there, each one of them who did not already had small-pox having been carefully re-vaccinated before being allowed to enter on her duties (*Medica Chirurgical Trans. vol.*). Mr. Marson had been connected with the Small-pox Hospital above

* The work of Dr. Edward C Seaton Medical Inspector to the Privy Council (Hand-book of Vaccination) will prove of value to every sanitarian and practitioner of medicine as it contains all the necessary de-

seventeen years when he made the preceding statement, which, according to Dr. Edward C. Seaton, "holds equally good now after a connection of more than thirty-two years."

From the preceding considerations the important practical rule has been chosen: That every person should be re-vaccinated about the age of *puberty*, for the age of most danger from post vaccinal small-pox is from fifteen to twenty-five; on the other hand, when there is any unusual risk of small-pox, as in localities in which the disease is prevailing re vaccination may be and should be performed at any period of life after birth.

6. *During the nineteenth century the application of steam to the rapid transportation of human beings and merchandise, has furnished the most important and essential condition for the rapid and continuous spread of small-pox over the entire face of the habitable globe; and but for the discovery of vaccination by Edward Jenner, this pestilence would have reigned without intermission in all commercial centres and been perpetually propagated along all the lines of human travel and intercourse.*

Fortunately for mankind, the application of steam to the wants of mankind was preceded by the discovery and diffusion of the process of vaccination.

OUTLINE OF THE INTRODUCTION OF COW-POX INOCULATION INTO VARIOUS COUNTRIES, AND ESPECIALLY THE NEW ENGLAND, MIDDLE AND SOUTHERN STATES OF THE UNITED STATES OF NORTH AMERICA.

The following observations, facts and statistics will show that the most powerful and impregnable argument in behalf of vaccination is furnished by the simple historical narrative of the INTRODUCTION OF COW-POX INOCULATION IN VARIOUS COUNTRIES. The labor necessarily endured in the tedious search through the records of medical science, and the still greater labor of analysis, comparison and synthesis, has received the great and inestimable reward of establishing, by numberless facts, the value of vaccination in preventing and modifying small-pox, and in vastly diminishing the sufferings and mortality of the human race.

HISTORY OF COW-POX INOCULATION IN ENGLAND.

It does not appear that the anti-variolous power of cow-pock was generally taken notice of in England until after the introduction of small-pox inoculation; before that time a knowledge of it was chiefly confined to cow doctors, farmers, etc., who did all in their power to keep its existence a profound secret, lest it should hurt the character of their milk. When inoculation for small-pox was first practiced in England, most of the practitioners engaged in it frequently experienced disappointment in communicating that disease by inoculation or otherwise, and they constantly found that those who thus resisted the infection had previously had the cow-pock. About one hundred and twenty four years ago, three surgeons, Messrs. Fewster, Grove and the celebrated Sutton, formed a connection for the purpose of inoculating for the small-pox.

In their practice, which became very extensive, they found that a great number of patients could not be infected, notwithstanding repeated exposure under the most favorable circumstances. At length the cause of the

ilure was discovered, by the case of a farmer whom they could not infect ith the small-pox, though he assured them he never had the disease, but ld them he had had the cow-pox. This fact incited the gentlemen to in- ire into the particulars of these cases in which they could not communi- te the small-pox, and they found that all the patients who resisted the fection of the disease had labored under the cow-pox at some period or ner of their lives. The result of their observations on this head, in an ple experience, during many subsequent years, was invariably the same. d many other gentlemen, extensively engaged in variolous inoculation, ve since discovered that their want of success in infecting patients with all-pox proceeded from the same cause.

In the year 1780, a young womam who some years before had taken the cow- x while milking cows, being desirous to know whether this circumstance uld secure her from the small pox, went to the Small-pox Hospital in Lon- n, where she was inoculated and exposed in all possible ways to the conta- n, yet did not take the disease. A man who had had the cow-pox sev- l years before, went to the Hospital, and was inoculated for small-pox; remained there in the very midst of contagion for several weeks, but did take that disease. About one hundred and thirty-two years ago, a mer who lived in Wiltshire, when he was going to London, being asked ether he was not afraid of the small-pox, replied—no—for he had had cow-pox.

n a letter dated Axminster, April 12, 1802, from Mr. Nicholas Bragge Sir William Elford, Baronet, we find the following communication: "It ow more than thirty years ago that I first made experiments, and proved t the vaccine disase was a preventive against the small-pox, and it is, elieve, more than twenty years ago, that, through the Rev. Hermen w, I acquainted Sir George Baker, Baronet, with the observations and eriments I had made. It is twenty years ago that Mrs. Rendall, the of a vegetable farmer in the parish of Whitechurch, near Lyme, in setshire, inoculated herself and three or four children for it; *and these dren, who have long since arrived at manhood, have inoculated their friends neighbors whenever an opportunity has offered.*" Many communications similar nature may be found in the Report of the Committee of the se of Commons on Dr. Jenner's Claims.

the year 1767, a butcher, near Bridgeport, aged twenty, being informed if he would allow himself to be inoculated with cow-pock, it would serve him ever after from taking the small-pox, with which he had not previously affected, was accordingly inoculated by a needle in two or e places on the hand. In eight days the parts inflamed, the hand led, headache and other symptoms of fever came on. He was after ds inoculated for small-pox several times, and exposed in every way to ut did not take the disease.

r. Benjamin Jesty, farmer of Downshay, in the Isle of Purbeck, ap- ed at the Vaccine Pock Institution, London, in August 1805, when fforded satisfactory evidence of his having vaccinated his wife and two s, Robert and Benjamin, in the year 1774, who were thereby rendered sceptible of small-pox, as appeared by the exposure of all the three es to that disorder frequently during thirty-one years, and from the ulation of the two sons for small-pox nineteen years before. He was o undertake this novel practice in 1774, from knowing the common on of the country ever since he was a boy, that persons who had gone gh the cow-pock were unsusceptible of small pox, from himself being red incapable of taking that disease, having gone through the cow-pox years before; and from having known many individuals, who, after

the cow-pock, could not be infected with small-pox. During their visit to London, Mr. Jesty and son willingly submitted publicly to inoculation—the former with cow-pock, and the latter with small-pox—in the most rigorous manner, but neither could be infected.

Mr. White, of Bath, in a letter to Mr. Creaser, of that city, mentions the case of a laboring man who, about the year 1780, being then a farmer's boy, had the disease communicated to him in a frolic, upon a small scratch in his hand, by one of his fellow servants, who had gotten it by milking a cow. He has since been repeatedly inoculated without effect; his family has had the inoculated small pox around him, and he has more than once been exposed to the most malignant species of that disease without any sort of effect being produced upon him.

About the year 1782, when Dr. Archer was physician to the Hospital for Small-pox Inoculation, Catherine Wilkins, from Crichlade, Wittshire, who had had the cow-pock, in consequence of milking cows, came to her brother in London, who, being desirous of ascertaining whether this circumstance could be depended upon as preventive of the small-pox, sent her to the hospital for inoculation, where she was inoculated with variolous matter by the doctor, against which, however, she was proof.

In the year 1787, when there was a general inoculation for the small-pox in Wincaunton, in Somersetshire, a young woman was twice inoculated without effect. The failure was attributed to having had the cow-pox some years before.

The failure so often remarked of communicating small pox to blacksmiths by inoculation, must have arisen from them previously having been infected with the equine pock, in dressing the horses' heels laboring under that complaint.

The first allusion to cow-pock on record is noticed by Dr. Jenner, in a letter to Mr. Ring, "When the Duchess of Cleveland," said he, "was taunted by some of her companions, that she might have to deplore the loss of that beauty which was then her boast, (the small-pox at that time was raging in London) she made a reply to this effect, that she had no fear about the matter, for she had had a disorder, which would prevent her from ever catching the small-pox." The author from whence this intelligence was derived, could not be recollected, but Dr. Jenner was disposed to believe that it alludes to cow-pock.

Jenner, in his first treatise, besides referring to cases in which the disease had been accidentally transferred to various persons at different periods long past, mentions it as having been specially noted in the Gloucestershire dairies in 1770, 1780, 1782, 1791 and 1794.

Jenner's first vaccination was performed in 1796, from a casual vesicle on the hands of a milker, but this source was not gone on with. In 179 he met with the disease again, then raised his first stock of lymph. After the publication of Jenner's discovery, accounts were obtained of cow po having occurred in at least eighteen counties besides Gloucestershire, th county in which his own observation were made. In January, 1799, Wood ville met with the cow-pox in the London dairies, and propagated the di ease to the human subject. In the spring of the same year cow-pox wa seen in North Nibley, in Gloucestershire, and another stock obtained fro it for Jenner's use, and soon after he also obtained a new supply from th Kentish Town.

In 1836, Mr. Leese, one of the vaccinators of the National Vaccinatio Establishment, obtained a stock from the cow, and propagated it.

In 1838, the disease was met with in Gloucestershire by Mr. Estlin; 1838 or 1839, in Dorsetshire, by Mr. Fox, of Cune Abbas; in 1839, also

orsetshire, by Mr. Sweeting, of Abbotsbruy; in 1838, 1840 and 1841, in e Vale of Aylesbury, by Mr. Ceely; from all these sources lymph was nsferred to the human subject.

No doubt the disease might have been found much more frequently if it d been only thought worth while to look for it, and it is probable, also, t cases had been found, and used for raising lymph, which have passed recorded.

When the Epidemiological Society made inquiries in 1851, several in-nces in which practitioners had met with cow pox, and had vaccinated h the lymph obtained from it, were brought to light; as by Donald lrymple of Norwich, by Mr. Beresford of Narborough, in Leicestershire; Mr. Gorham of Aldeburgh, by Mr. Alison of Great Retford, by Mr. es of Leckhampton, by Mr. Rudge of Leominster, and one or two ers. Mr. Sweeting met with the disease in two instances, and dissemi-ed lymph obtained by the vaccination of persons from each source.

n Ireland cow-pox was early reported as having been known, and anti-iolous powers attributed to it.

t is also worthy of note that Dr. Gregory experimented with a renewed ph at the Small-Pox Hospital* in 1836.

he source of the new lymph is not mentioned, but the difference in re-s from the lymph in use at the hospital, may be given in Dr. Gregory's words: "the lymph in use at this hospital has been preserved in un-rrupted descent for a very long period of time; but for three or four s past I have noticed that its intensity was diminished, and that eight en incisions produced no more irritation than the three to which I was stomed fifteen years ago. In March last (1836) Mr. Marson, the resi-surgeon, employed lymph obtained from a different source. This lymph found to be more intense and active than the old lymph. Three or incisions were now found amply sufficient; and so satisfied was I of superior quality of the new lymph that, after a careful trial of about months, the old lymph was suffered to die out, and for the last six ths we have vaccinated from the new stock. The facts have convinced hat vaccine lymph in passing through the bodies of many persons loses ocess of time some essential portion of its activity. It follows from that an occasional resort to primary lymph from the cow becomes a er of great importance, perhaps even of indispensable necessity."

HISTORY OF THE COW-POX IN IRELAND.

cording to Dr. Samuel B. Labatt†, in some parts of Ireland, particu-lar in the County of Cork, the cow-pock, under the name of the *shinach*, has for ages been esteemed a perfect preventive of the small-pox, so much so that old women have been in the habit of bringing children to the neigh-boring dairies to have them affected with it. Dr. Barry, of Cork, gives many instances of persons having had the cow-pox more than fifty years before; and informed Dr. Labatt, that one woman, aged eighty years, as-serted that as long as she could remember, an opinion prevailed, that those who had the cow-pock cannot take the small-pox, and that people pur-posely exposed themselves to the former under that persuasion.

Dr. Huston, of Colerain, an eminent practitioner of long standing, and one of the earliest and most zealous promoters of vaccination in Ireland, communicated to Dr. Labatt the following facts:

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*Medical Gazette, vol. xxi, p. 861.

†Address to the Medical Practitioners of Ireland, on the Subject of Vaccination. Second Edition. By Samuel Labatt, M. D., etc., Dublin, 1840.

"Before Dr. Jenner's discovery of cow-pock, I met with two mothers of families who had not had small-pox, and when inoculating their children, I inoculated the mother also. All the children passed through the disease regularly and safely, but nothing took place in the mother's but a trifling local affection; and since the discovery of cow-pock I have met with many females who never had small-pox, and I inoculated some of them with small-pox infection, and in every one of them only local affection was produced; and I was, in several instances, able to trace this unsusceptibility to their having, several years before, contracted infection from the cow in their hands in milking. I believe that almost all the female cases here mentioned were owing to cow-pox in milking, for few men escaped small-pox."

A gentleman from the County of Wexford, in 1804, informed Dr. Labat of three women, who, the year before, in consequence of milking cows affected with sore nipples, were attacked with considerable inflammation of their hands, attended with much pain; they were then very young, and never had the small-pox, and although they were repeatedly since exposed to the contagion, they did not take the disease. Before the publication of Jenner's discovery, cow-pox had long been known in Wexford and the adjoining counties, where it was called *punthans or punclhane*, and was esteemed a certain preventive of small-pox; it had also been observed among the cows in the neighborhood of Dublin.—*An Address to the Medical Practitioners of Ireland, on the Subject of Vaccination; Second Edition*, pp. 27–28.

HISTORY OF COW-POX IN THE DUCHIES OF SCHLESWIG AND HOLSTEIN.

The knowledge of the circumstances of the origin of cow-pox in different countries and at various times, is of great importance; for to this source must the medical profession, in all time to come, look for fresh uncontaminated supplies of vaccine matter, wherewith to protect mankind from the inroads of small-pox.

The history of cow-pox in England has up to the time of the publication of the work of Dr. Woodville, been fully recorded in the works of Jenner, Pearson and Woodville; and it has been shown that the disease was known in Peru and Mexico before the introduction of vaccination in those countries.

The most important addition to the history of cow-pox in the early part of the eighteenth century, was made on the third of December, 1802, by the Medical Faculty of Kiel, in their report to the Royal German Chancery of Copenhagen, relative to the cow-pox in the Duchies of Schleswig and Holstein.

The report of the Medical Faculty of Kiel was signed by Drs. Ackerman, Weber, Hensler, Fischer and Pfaff, and was based upon the replies to the memorial sent by them to all the districts, and other physicians in the duchies and neighboring provinces, especially the Circle of Eaton, and circulated still more generally by the care of the chancery.

The second section of this report related to the observations which had been made on cow-pox as affecting the cow, as well as the facts known in Holstein prior to the Jennerian discovery; the effects of cow-pock on the human body, and especially its power of preventing small-pox.

In arranging the facts contained in the report, the Faculty of Kiel followed the order in which the questions were addressed to the physicians of both duchies:

1. *"How long has the cow-pox been known in either duchy, according to disputable evidence?"*

The reports unanimously agreed in stating that, where it occurs, it has been known for several generations.

Dr. Heinze referred to an epidemic cow-pock among the herds at Ohlendorf as far back as 1746, and named his authorities, who were then living. A countryman, Daniels, of Halendort, remarks, that before the time of his mother, who is now eighty years of age, the cow-pox was known; and, in the family of Inspector Carstens, at Monch Neversdorf, the knowledge of it goes as far back as when his grandfather was a boy.

According to the reports, the cow-pock was known in the greater part of Holstein, especially on the noble estates in the Probstey and their neighborhood; in the contiguous county of Oldenburgh; in the county of Plön; in Oldesloe, Legeberg; and in the tract of country from there to Rendsburg; in short, in the Eastern parts in general, while it is totally unknown in the Western, as in Pennebury; in Glückstadt; and especially in the parishes, as those of Norder and Süderdithmarschen; in Wilstermarsch; in the marshes of Schleswig, Eiderstadt, and in the neighborhood of Tondeln. It prevails especially among the numerous herds of the great dairies; commonly spreads, when it appears, very quickly through the whole herd; and often returns to the same herd, like the epidemics of small-pox among men, after longer or shorter intervals of fifteen, twelve, ten, or even a few years. On the contrary, there are cases where, in the course of thirty or forty years, it has only appeared once in the herds of the same dairy. In the very country where it has once raged among the large herds of the dairies, it has not affected the single cows of the peasantry.

In Wulfdorf, the cow-pox was epidemic in 1762, while the cows were still in their stables; and again in 1764, after they were out at grass. As no vaccinations were taken, it affected the whole of them. The farmer whose name was Stuhr, did not regard it, as he knew a remedy which alleviated it much, and rendered it very short. It consisted of green *euphorbium* in powder, mixed up, to the state of a thick salve, with fresh butter. The size of a pea of this rubbed into every pustule, destroyed the poison; and a hard crust was quickly formed; the inflammation of the teats disappeared; the crust fell off in a few days; and, in a few days more the teats were well. He applied the same remedy to the hands of the milkers who were infected, and often prevented, by means of it, the painful inflammation of the arm. In June, 1787, the cow-pox appeared in a herd of 400 cows at Fulterkamp, and became general. They were, in general, successfully treated, by the application of a compound linament; but some, to which it was not soon enough applied, lost their teats. Dr. Heinze quoted thirteen other cow-pox epidemics, which prevailed in different herds, in different years, and at different seasons; and by which individuals were infected, who resisted the small-pox during life.

2 and 3. *"What different kinds of cow-pox are known in your district? How are they distinguished from each other, by color or other character?"*

The reports furnished less conclusive information on these subjects. In general, they agreed that there are several kinds of pox which affect the cow, but the character of these are, in part, so imperfectly given, that an accurate diagnosis of them is still a deficiency. Several reports distinguished the cow-pox.

1 (*a*). In regard to its intensity, into mild and malignant. They, however, were said to resemble each other in their essential external characters, such

as color and form; and to be distinguishable from each other by the following circumstances:

The *mild* are more distinct *(variol discutæ)*, and somewhat larger, being as large, or larger, than a pea; all the symptoms connected with them, as the swelling of the teat and udder, the pain, etc., are milder; and the subsequent ulcers are not so deep, and heal without any further bad consequences.

The *malignant*, on the contrary, are more frequently contiguous, and, as it were, confluent *(variol confluentes)*, and smaller, not being larger than a lentel; and, in the sequel, form a confluent ulcer, covered with a single crust, accompanied with much swelling and pain, and even sometimes causing the loss of the whole teat or udder.

According to some reports, however, the malignity of the cow-pox appears to be connected with other more specific differences:

(*b*). From the reports it appeared that there are various species, differing in their color, appearance, form, relation to the small-pox, etc.; but in most of the reports the characters were too vague to admit of the ennmeration of the different species with certainty.

Dr. Nissen, by transmitting to the Medical Faculty of Kiel, colored drawings of the different kinds of cow-pox seen by himself, threw the greatest light on this subject. By comparing these drawings with the other reports, the Medical Faculty enumerates the following kinds of cow-pox.

1. The *Blue genuine cow-pox*, which is also described by some as blue-grey, pearl-colored, and even white. According to Dr. Nissen, they are the smallest which he has observed, and the most benign; they discharge much matter, and the ulcers eat somewhat deep, but they form a crust much sooner than the other kinds.

2. The *yellow cow-pox*, which was stated in the greatest number of the reports to be smaller than the former, and are described to be yellow from their first appearance, and to continue so, containing a yellow matter, are also contagious, but according to one account, at least, do not afford security against the small-pox. As observed by Dr. Nissen, the yellow, or brownish-yellow cow-pox, were larger than the blue, and almost transparent, emtited an extremely unpleasant and almost putrid smell; and soon degenerated into itchy, eating sores, from which matter and blood fell in drops. In cows with reddish stripes, they had more of a brownish color. They were infectious, and the boils and ulcers arising from them had the same unpleasant effect on those who milked them. Those who were infected by them were often confined several days in bed, suffered some pain in the pustules, and were in danger of losing some of their fingers.

To this species belong the red or yellowish-red variety, to which Mr. Henckel, surgeon in Lehnsahn, gave the title of malignant, and which, when together, acquiring the appearance of yellow wax, and stinking abominably.

3. The *Black Cow-pox.* Dr. Nessin alone described them minutely. They were larger than the blue species observed by him; had completely the appearance of scrofula; also, degenerated into bad ulcers, like the yellow kind; and, in the manner of their drying up, resembled them exactly. On the hands of the dairy-maids who were infected by them, they were equally large and black; and when they changed into ulcers are particularly deep.

4. *Wind Cow-pox*, which resemble blisters, and contain a watery fluid only; they are said to be less infectious than the yellow cow-pox, and to afford no security against small-pox.

5. *Red Cow-pox.* Dr. Heinze remarked them in about twenty cows in the country meadow in Pretz. The red vesicles stood like pearls, and contained thin matter.

4. *What influence is the cow-pox said to have on the cow, and, perhaps, also, on other animals?*

All the reports agree that the cow-pox, considered as a general disease, is slight, and that the constitution never suffers obviously, since during its continuance the cows eat, chew the cud, stale, and sleep as before; and, considered as a local disease, the degree of violence varies much; but even in the most violent degree, the general health does not suffer obviously.

It was always treated as a local disease, and the application of appropriate remedies, which individual farmers and cow doctors have long employed, and which, according to valuable observations communicated with regard to them by Dr. Heinze, are slight caustics, are attended with speedy effect. Even the secretion of milk in many cases is not obviously affected, and in the worst cases not entirely suppressed.

The influence of cow-pox in other animals is not mentioned in any of these reports, and one of these distinctly states, that other animals, as horses and sheep, which pasture on the same meadow with the diseased herd are not affected by it. Also all these reports mention only the cow-pox of milk cows, and never hint at its being communicated to calves, bulls, or oxen.

5. "*What proofs can be deduced from the accounts in your district, with any certainty, that cow-pox is a preventive of small-pox?*"

The greatest number of reports, from the districts where cow-pox is known, agreed that its powers of preventing small-pox have been known as long as the disease itself.

About fifty cases were recorded in these reports, illustrating the security afforded against small-pox by cow-pox, with the names, age, and sex of the individuals when alive, and of the authorities, when dead, specified. The most remarkable was that of a woman, still alive in 1802, who had the cow-pox when a year and a half old, and who remained secure against small-pox infection for sixty years; another fifty-six years, some about forty, several thirty, and some twenty, almost all alive in 1802.

The daughter of a farmer of the name of Priehm, when fourteen years of age, was affected with the cow-pox in 1746, when it was epidemic in the herd at Ohlensade. She married a M. Martens; lost eight children in the malignant small-pox, whom she attended without being infected; and in 1802, being above seventy years of age, lived with her son; and four years before nursed her grand-child who had the small-pox from inoculation.

In 1742, when the cow-pox was epidemic in Legalendorf, Mrs. Volker, then only a year and a half old, was infected by her mother, who was at that time obliged to assist in milking the cows. On returning to her house, her mother took her out of the cradle to wash her, probably without having previously washed her own hands; and a pustule, which had a foolish appearance, and had a large areola, appeared on one of the *labia pudendi*. In 1749 the small-pox came into the country, and she slept in the same room with her infected brethren; she also nursed her own children when ill with the small-pox; and at other times was frequently exposed to infection. In 1802, she was sixty-three years of age, and lived with her son-in-law, Daniels, in Legalendorf, and was still proof against small-pox infection.

Most of the fifty cases mentioned in the reports of having the cow-pox, were repeatedly exposed under the most favorable circumstances to the

small-pox infection, and five of them allowed themselves to be inoculated for the small-pox along with their children, without any effect, although the latter took the disease.

There was rarely in the reports any specification of the kind of cow-pox which afforded security against the small-pox, but when there was, it is reported as *genuine blue cow-pox.*

Four observations of an opposite character were recorded, where small-pox occurred after cow-pox, in these reports. The wife of Abraham, steward at Behrensbrock, according to the information given to M. Mehring, Surgeon at Emkendorf, by her neighbor Lerch, who himself had had the cow-pox several times, had the cow-pox very severely; and, if Lerch remembered accurately, even several times, and yet she died of small-pox nine years before 1802. What kind of cow-pox she is said to have had is not mentioned. The second case was mentioned by Kofal, the dairy-woman on the estate of Caden, to the steward. Her son was infected pretty severely by the cow-pox in the hands and arms, in consequence of milking the cows; and, almost a year afterwards, he took the small-pox along with the rest of the children.

This was a case of infection by the spurious yellow cow-pox, as was fully proved by the accurate description of it, and by other circumstances, as the want of any constitutional affection, except the pain, and the absolute similarity of symptoms in those affected, whether they had previously had the small-pox or not, etc. Mr. Henckel, of Bensahn, Surgeon, relates two cases, but which on the one hand were not sufficiently attended, as the subjects were not alive, and on the other it was uncertain whether the cow-pox which failed to give them protection, was genuine or spurious.

Dr. Weber, more than twenty-five years before 1802, had his attention directed to the cow-pox by landed proprietors and dairymen, and made his pupils acquainted with the subject. Among the great numbers whom he inoculated with small-pox, he always met several from the country, of whom it was said, that the inoculation would not succeed, because they had had the cow-pox; and this was most commonly the case. A few of them only took the small-pox from inoculation. Even at that time he was informed that occasionally country people inoculated themselves by simply scratching the hand, and rubbing in fresh cow-pox matter, to prevent them from taking the small-pox. Two girls, effectually inoculated thus with the real blue cow-pox, the one three and the other five years, afterwards took the small-pox in a severe and confluent form. These two instances Dr. Weber knew from personal observation; and he had heard of two others from a farmer well acquainted with the eruption, one of which was his own daughter.

6. "*Has any unpleasant consequences been observed from the action of the cow-pox in the human body?*"

All the reports agreed that the cow-pox was followed by no consequences prejudicial to health. This was proved by instances of persons who had the cow-pox in their youth, were preserved from small-pox all their lives, and lived to the age of sixty, seventy and even eighty. The cow-pox received by infection in most of these reports, is described as very mild, so far as respects the general affection, and also as a local disease. A single case only is mentioned, in which a pretty smart fever with delirium, arose from infection; and several cases were quoted where the local affection was considerable, consisting of a great swelling of the whole arm, with violent inflammation and pain, but without being followed by any local consequences.

7. "*What effect has the cow-pox on those who have already had the small-pox, pecially on the dairy-maids?*" Most of the reports agree that those girls ho have had the small-pox are still susceptible to the cow-pox; but at the me time the local affection is much slighter, and the disease was then, in e strictest sense of the term, local.

8. "*We are assurred that, in small places of the duchies, there are families country people in which either the real inoculation of the cow-pox, or at least tentional infection, by milking, has for several generations been practiced, rtly as a secret for preserving themselves from the small.pox. Are there any oofs of this assertion in your neighborhood?*"

Although the reports contained no direct answer in the affirmative, it ay be concluded, from several accounts, that particular families had long ailed themselves of the advantages resulting from vaccination. Several stances are related in which they intentionally exposed themselves to in- tion from pustules in the cow, or even practiced inoculation coarsely, d recommended it to others.

It is further remarkable, in this point of view, that all the members of e family of the Inspector Carstens, from the grand-father downwards, ., he and all his brethren, the father of Mr. Carstens and his mother, so his father-in-law and all his children, including Mrs. Carstens, were eserved from the small-pox by having the cow-pox in their youth.

Dr. Heinze relates a remarkable instance which fell under his own servation, of a schoolmaster, Plett, in Laboe, who, in 1792, inoc- lated three children of a farmer called Martini, at Lammers- gen, by introducing fluid matter, taken from the cow, into a wound made h a pen-knife in the skin between the fingers, and with success, as they isted the small-pox, when epidemic there. and who was only deterred m continuing the practice, by the great swelling in the arm of the ngest child.

9. "*Is there any positive proof, that persons having the cow-pox hav infected ers?*"

One instance is particularly mentioned by the Rev. Mr. Holst, of Riel, l Dr. Heinze, with the names of all the parties, some of whom were still e, of a person who was infected with the cow-pox by milking a cow, com- nicated the disease to her sister's hand by rubbing it with her infected nd, by which means her sister was secured against the small-pox. A ond case was mentioned of a child infected by its maid; and a third, of hild by its mother, who had previously milked a cow without either of m having the cow-pox themselves.

The propagation of the infection amongst the cows, was chiefly occa- ned by the hands of the milkers, even when these were only soiled with matter from the cow, and not themselves affected with the disease.

With reference to the question as to the *origin of the cow-pox from the ease (Manke)* in horses, all the reports with the exception of one answered he negative. Mr. Fries, surgeon in Pratz, was informed by a veterinary geon of the name of Brasch, who lived upon the estate of Rixdorf, that dairy-man at Tresdorf, below Rixdorf, had a newly foaled mare, so very with the *grease*, that at last the udder was affected to such a degree, that foal could not suck her any longer. He therefore, ordered one of his d-servants to milk the mare daily, and every day after milking her, to her hands with some ointment. This girl also milked the cows; and, short time, the whole of them were affected with cow-pox, of which e did not previously exist among them the slightest appearance. If statement is accepted as correcct, it is an evidence that the disease not confined to the heel or the horn but affected the entire system, and now reasonable to regard this as an instance of horse-pox.

This view is sustained by the observations of Mr. Kolen, a veterinary surgeon, to the effect that persons who dressed the horses' heels afflicted with the grease (Manke) and then milked the cows, failed to communicate the cow-pox; and of the Privy Counsellor, Von Thienen, that on his estates, which were very wet, the grease was very frequent, while the cow-pox, in a period of forty years, has appeared in some of them only once, and others not at all; these marshes, and some other situations, where the grease is very common, being free from the cow-pox; the frequency of cow-pox in Holstein, where the milk-maids have no connection whatever with the horses.

COW-POX IN GERMANY.

In Germany, after the promulgation of Jenner's discovery, inquiries showed that cow-pox had been recognized in various places, especially in Mecklenburg, Holstein, Brandenburg, Silesia, in the country about Greissen and Erlargen, and also in Switzerland. A statement was found in a Gottingen newspaper, of the date of 1769, that this disease had been often seen about this place, and milkers affected by it were thereby protected against the small-pox.

An instance of cow-pox occurred in Wirtemberg in 1802. In 1812, the disease was seen in Berlin and its environs, by Bremer; near Luneburg, by Fischer, and in Greifswalde by Mende; in 1816, at Leggerde in Brunswick, by Giesker. In the eleven years preceding 1824, Luders saw several epizootics of the disease in Holstein, and in 1824, 1825, 1829, 1830 and 1832, Ritter made some successful vaccinations from cows which he found suffering from it in various parts of Schleswig-Holstein.

Ritter says that in some parts of Schleswig-Holstein the disease is very common; he had himself seen it on many previous occasions, but not in the stage admitting lymph to be taken, nor till the pustules on the milkers' hands had become sores. Probable examples of the disease were then met with in 1829 by Riss at New Breisach, and by Albers, near Stralsound, in 1834. The history of the discovery of cow-pox in Wirtemberg is interesting as showing how much these discoveries depend on the zeal with which the disease is looked for. In as much as the tendency of all herd-keepers and their servants is to keep secret the existence of any disease among their cattle, the Government offered premiums for the discovery of natural cow-pox in the cow; and in 1825 it was determined that a prize should be given for each case of cow-pox reported, which should be found in such a state that the character of the disease could be well ascertained, and the case used for vaccinating from. Cases were met with every year, and in eleven years (1827-37) the genuine cow-pox was found (in a state that successful vaccination could be performed from it) in sixty-nine different places, the cows affected by it amounting to eighty-four; besides which there were reports from 152 places, regarding 208 cows, in which the disease probably was cow-pox, though vaccinations were either not performed at all from them, or were unsuccessful.

In Holland, according to Numann, cow-pox was seen in 1805, in 1811, and in 1824.

In Russia, in 1838, an epizootic of cow-pox is said to have occurred among the cows in a village in the neighborhood of St. Petersburg.

In Italy, cow-pox was discovered in 1800, on the plains of Lombardy by Saceo, and again in 1808 and 1809, by the same successful vaccinator; in 1830 it was seen in Peidmont. In 1812 it was discovered at Naples. In 1832 and 1834, it was found at Rome on cows of Swiss breed, by Dr. Maceroni, and in 1834, a lymph stock was established.

COW-POX IN FRANCE.

In France, cow-pox is said to have been found in 1810 in the department La Meurthe; and in 1822, at Clairveaux. In 1836, it was discovered at Passy, Amiens and Rambouillet; in 1839 it was discovered at Rouen; in 1841, at Saint Illide, at Saint Seine, at Pertlhac; in 1842, at Pagnac; in 1843, at Veux Junieaux; in 1844 in a cow belonging to M. Magendie; in 1846 in three departments; in 1852 at Rheims, and also in the department Eure-Et-Loire; in 1854, in the arondisement of Sancerre and at Bezieres; in 1863, at Guzonville; in 1864, on farms in three villages near Nogent, at Petit Quevilly, near Rouen. In 1866, cow-pox was discovered at Beaugency.

OBSERVATIONS OF M. J. B. BOSQUET* ON THE COW-POX (PETITE-VEROLE DES VACHES), DISCOVERED AT PASSY, NEAR PARIS, ON THE TWENTY-SECOND OF MARCH, 1836.

On the twenty-first of March, 1836, a woman residing at Passy, a market, applied to a medical man in the neighborhood on account of an eruption upon her hand. He recognized the affection as the cow-pox, and the same day sent the woman to M. Bosquet.

Bosquet states that there were vaccine pustules on the right hand and one upon the upper lip, and he was struck by the unusual bluish tint they exhibited, such as Jenner had mentioned as a characteristic of the cow-pox. From a pustule on the hand he vaccinated nine children. The lymph was taken late in the course of the disease; it was thick, white and purulent. Bosquet, however, vaccinated the children with it by three punctures of the left arm, and used the ordinary humanized lymph in three places upon the right arm. In one of these nine children no effect followed in either arm; in the others the old lymph took, and from twenty-four punctures there were obtained twenty-two pocks. But in only three of these eight children did the new lymph take upon the left arm, and in each of these it took only in one place. Only one of these three children returned for examination on the eighth day—a weakly, puny infant, three months of age—three punctures on the right arm with the old lymph and one upon the left arm with the new, had given rise to pocks as miserable and lan-guishing as the child itself. M. Bosquet took lymph from the pock on the left arm resulting from the vaccination with the cow-pox matter, and vaccinated four other children on the left arm, again making a comparative vaccination with the old lympt upon the right arm.

All the punctures took—the three with new virus on the left arms and the three with old virus on the right—on all the four children.

The vesicles ran a completely parallel course up to the seventh day, when a difference became perceptible in favor of the new virus. The vesicles were better formed, flattened and more depressed in the centre on the eighth day than those from the old virus, more brilliant in appearance and firmer, and the lymph they contained was as clear as crystal. On the twelfth day the difference was still more marked; the new vesicles were flat and nearly four lines broad, firm at the border, prominent and full of force and vitality; the old ones, on the other hand, were already beginning to dry up.

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* La Cow-pox (Petite-Verole des Vaches) Découvert a Passy (Prés Paris), le 22 Mars, 1736. Notic epar J. B. Bosquet, Secrétaire du Conseil et Membre de l'Académie Royale Médeciné, Chargé des Vaccinations Gratuites, Chevalier de laLégion-d'Honneur, etc. Ave une Planche Cilriée. A Paris, 1836.

M. Bosquet presented in his valuable memoir on the cow-pox discovered at Passy, in 1836, the following comparative view of the effects of the old humanized and the new lymph:

ANCIEN VACCIN.	NOUVEAU VACCIN.
1°. Les deux premiers jours après l'operation, les piqûres ne présentent rien d'apparent.	1°. Dès le l'endemain de l'operation, on distingue ordinairement un point rouge qui indique un commencement de travail.
2.° Du troisième au quatrième, on aperçoit un petit point rose, plus sensible au doigt qu'à l'œil.	2°. Ce point d'un rouge plus vif, est aussi sensible à l'œil qu'au toucher.
3.° Dès le cinquième la pustule vaccinale commence à se dessiner avec tous ses caractères; déjà plate à son soumet, légèrement déprimée au centre; les jours suivans ces caractères ne font que se marquer davantage.	3°. Mêmes caractères, excepté qu'ils sont mieux dessinés; la depression est plus marquée, l'éclat plus brillant, la consistance beaucoup plus ferme.
Au septième jour la pustule tout entière reflète cet éclat argenté qui la caractérise, et commence à s'entourer d'une petite aréole rouge.	Le virus est parfaitement limpide.
La consistance en est si molle, que pour peu qu'on y touche avec la lancette, elle se vide, et le virus qui en soit est déjà un peu louche.	Il n'y a pas encore vestige d'aréole.
4°. Au huitième jour l'aréole grandit; au neuvième elle s'efface; la pustule plus large et plus haute, se ramollit encore. Le centre se courinne d'un point brun, signe certain d'un commencement de dessiccation.	4°. Le bouton n'est jamais plus beau, plus ferme, plus brillant.
Le virus se trouble de plus en plus.	L'aréole commence a se prononcée.
	Le virus conserve sa transparance et sa pureté.
5°. Du dixième au douzième jour la dessiccation fait des progrès rapides Le bouton tout entier se couvre d'une croûte jaunâtre encore molle, laquelle brunit de plus en plus, et se rapetisse en prenant plus de solidité.	5°. La pustule se dévelloppe en tous sens, sans changer de caractère.
	L'aréole est large et vive, le tissu sous-pacent profondement engorgé. Les glandes de l'aisselle souvent douloureuses, tumifiés, principalement chez les adultes.
	Néaumoins il n'y a pas toujours de fièvre, s'il y en a, c'est principalement à ce moment qu'elle est sensible.
	Le virus commerce à se troubler; mais il n'en est pas moins bon à transmettre.
6°. A partir du trezième jour, la croûte réduite au volume d'une grosse lentille, se sèche toujours davantage, et en séchant elle diminue encore. Elle tombe communement du quinzième aux dix-huitième jour.	6°. Les pustules d'un diamètre de trois à quatres lignes, deséchées au centre, présentent un bounelet circulaire saillant élevé, et dont la transparence indique assez l'état du vaccin qu'il contient.
	Cet état dure jusqu'au quinzième jour, et quelquefois davantage.
	L'aréole est encore très vive et très etendue, comme on peut voir par la graveur.
Les cicatrices, en général très superficielles, se font plutôt reconnaitre à leur teinte rougeâtre qu'a la depression qu'elles laissent à la peau. Mais au bout de quelque mois, la peau revient à son ton naturel, et l'œil apeine à retrouvée les trace de la vaccine.	7°. Du quinzième au dix-huitième jour la dessiccation s'étend à toute la surface de la pustule. La croûte est plate, large brune et comme terréfiée. Pour la couleur je ne saurais mieux la comparer qu'à un amande grillé.
	En même temps l'aréole pâlit et se retire insensiblement jusqu'à ce que enfin elle s'efface complêtement.
	La chute des croûtes se fait commencement du vingt-cinquième au trentième jour.
	Aux croûtes succèdent des cicatrices larges, profondes et traversées par un foule de petites brides qui leur donnent

ANCIEN VACCIN.	NOUVEAU VACCIN.
	l'aspect réticulé. En y posant le doigt, on sent une cavité comme s'il y avait eu perte de substance. Il n'est pas rare que les croûtes laissent après elles un plaie suppurante, un ulcure dont il faut attendre la cicatrisation. J'ai vu des pustules creusu si profondément la peau qu'elles y faissaient de verétables trous. pp. 18-19.

We may thus briefly sum up the results obtained by M. Bosquet from e use of the old and new lymphs in the numerous comparative vaccinaons which he performed.

The new vaccine proceeds in its course at once more quickly and more wly than the old—more quickly in that it sooner gives signs of life, re slowly in that its career is more prolonged. The resemblance between e two sources of virus is at no time greater than on the seventh or eighth y. From that period the vesicles are quite distinguishable the one from e other, and the more they advance the more pronounced becomes the paration. As to the size, those of the new vaccine often acquire a size most double that of the others; they are also flattened, more brilliant, re umbilicated, better defined, and firmer. When looked at closely, they esent to the eye a grained surface, something like that of the rind of an nge; they appear to be more closely and firmly attached to the skin, and they become more developed they raise and drag upon it; while the old sicles are slighter, more superficial to the eye, and more raised, and look if separate from the skin, more after the manner of a "vesicle." Corponding to this is the areola; in the one it is active, extended and legmonous; in the other, slight, fugitive and erysipelatious.

Bosquet describes the cicatrix in the old and new virus:

OLD.—The scars are in general very superficial, and make themselves dent when the crust has fallen, rather, by their reddish tint than by any pression left in the skin. At the end of some months, however, the eye , with difficulty, if at all, discern any cicatrical trace whatever.

EW.—The crusts are succeeded by large cicatrices, traversed by a multide of little bands or bridles, which give them a reticulated appearance. ving the finger in one of these a cavity is easily perceived, as if there had n a decided loss of substance. It is not uncommon for the crust to e after them suppurating wounds or ulcers, the cicatrization of which y be considerably delayed.

I. Bruchir, of Versailles, also made comparative re-vaccination upon lve persons, using the new lymph upon one arm and the old upon the er; he found that the new produced well developed and perfect pustules, al in numbers to the punctures, while the old, if it took at all, gave modified or false pustules. Several medical men experimented subently with the new lymph, and their observations confirmed those of Bosquet.

milar results were obtained by Mr. Estlin, by the use of cow-pox matwhich he obtained on August 18, 1838, on a farm in Gloucestershire, re several of the cows were affected and where the farm servants had ived the contagion. (Medical Gazette, vol. 22, p. 977, "Accounts of a ply of fresh Vaccine Virus from the Cow." Medical Gazette, vol. 24, 975.

einbrenner's observations with Mrs. Pass's lymph in 1840, and with lymph obtained from other sources 1841 and 1845, confirmed the accuof the results announced by Bosquet in 1836.

DISCOVERY OF COW-POX IN AMERICA.

Don F. Xavier Balmes, Director of the Spanish Vaccine Expedition, discovered cow-pock in the cows of the valley of Allixico, near the city of Puebla de los Angelos, in the neighborhood ot Volladolid, in Mechvachan, and in the districts of Calaboza, in the province of Caraccas, and in the Peruvian Andes.

Dr. Waterhouse informed Dr. Jenner of the existence of cow-pock in several parts of America, where its anti-variolous power was not unknown.

"As one of our periodical inoculations," says Dr. Waterhouse, "which occur in New England once in eight or nine years, some people drive their cows to an hospital, near to a populous village, in order that their families might have the daily benefit of their milk. These cows were milked by persons in all stages of small-pox, the consequence of which was, the cows had an eruptive disorder on their teats and udders, so like small-pox that every one in the hospital, as well as the physician who told me, declared the cows had the small-pox."

Thus according to Dr. Waterhouse the human small-pox was conveyed to the cow, in the same manner as the cow-pock was communicated from the cows to the milkers in dairy countries, and the statement was strongly confirmative of the doctrine of the identity of small-pox and cow-pox.

The important services rendered the citizens of the United States of America by Dr. Waterhouse and President Jefferson, in the introduction of vaccination into the United States will receive due consideration; we regard it of importance to place in the following facts in chronological relation with the discovery of cow-pox on the American continent.

Professor Waterhouse wrote thus to Dr. Samuel Mitchell, of New York, editor of "The Medical Repository and Review of American Publications," in a letter dated Cambridge, Massachusetts, September 26, 1801.

"President Jefferson informs me that the kine-pox has pervaded or is pervading his family at Monticello, more than twenty having gone through the *genuine* disease—at least I presume so from the virus sent him, and the description he has given me of its effects. It is progressing in this quarter with undeviating success, very few spurious cases having occurred this season.

"Yesterday I received a letter from Doctor Jenner, one paragraph of which I must transcribe, because it contains the *golden rule of vaccination.*

"I don't care what British laws the Americans discard, so that they stick to this—*Never take the virus from a vaccine pustule, for the purpose of inoculation after the efflorescence is formed around it.* I wish this efflorescence to be considered as the sacred boundary over which the lancet should never pass."—*Medical Repository, vol. 5, p. 235.*

In the history of cow-pox inoculation in the United States, it was felt at an early date, that a *necessity existed of establishing a point of time for taking the vaccine virus for the purpose of inoculation, as a popular criterion.*

It was difficult if not impossible correctly to apply Jenner's golden rule in the practice of cow-pox inoculation amongst the African Negro slaves of the United States, owing to the color and structure of the skin of their bodies.

In a letter from —— —— to Dr. Waterhouse, dated Washington, December 25, 1801, the following inquiry was made:

"Knowing how little capable the people in general are of judging between genuine and spurious matter from their appearance or that of the pustule, I endeavored, in the course of my inoculations at M——, to fin

some other criterion for their guide. With this view, I was very attentive to discover whether there was a *point of time*, counting from vaccination when the matter is genuine in all cases. I thought that eight times twenty-four hours furnished such a point. I governed myself by it, and it has been followed here successfully by Dr. Gantt; but your experience, so much greater, can inform us whether this rule is a sure one, or whether any other point of time would be still more certain. To the eye of experience this is not necessary, but for popular use it would be all-important; for otherwise the disease degenerates as soon as it gets into their hands, and may produce a fatal security. I think some popular criterion necessary to crown this valuable discovery."

The following is the answer of Dr. Waterhouse:

"I was forcibly impressed with the necessity of fixing on some point of time, by way of popular guide, when to take the vaccine fluid for the purpose of inoculation, in order to prevent the evils you suggest.

"I know that the perfection of the virus differs somewhat in different subjects; but in the formation of a general rule it is necessary to impose a limitation. Dr. Jenner says, 'I prefer the fifth day, or the sixth, or the seventh, eighth, or (if the efflorescence is not far advanced beyond the margin of the pustule) the ninth day.' But I conceive this is impossible to be discovered with requisite precision on the skin of the African. The criterion of lympid matter is fallacious; for, in the rising of a vesicle from almost any cause, the scarf-skin separates from the true, and a portion of *the superfluous water* of the blood, and sometimes of the coagulable lymph is found under it. I have known this *limpid* fluid exude in considerable quantity from the vaccine pustule that has been too much irritated by picking, and exhausted of its virus. It gives a shining, glazy appearance to the thread. I know of no writer or practitioner who has made this distinction.

"Were I then to fix on a point of time, of all others, as a general and popular rule, I should say *eight times twenty-four hours*, this being the result of my own experience. "BENJAMIN WATERHOUSE. Cambridge, Jan. 28, 1802."—*Medical Repository, vol.* 5., *p.* 347.

Dr. Samuel T. Mitchell and Dr. Edward Miller, of New York, editors of *the Medical Repository and Review of American Publications*, at an early day in the history of vaccination, suggested to the physicians of the United States, to inquire for the vaccine disease among the cows of this country. (*See Medical Repository, vol.* 4, *p.* 322.

Dr. William Buel of Sheffield, in the State of Massachusetts, in a letter to Dr. Edward Miller, dated twentieth May, 1801, describes the case of a lad in his neighborhood affected with an eruption on the face and hands, greatly resembling vaccine pustules, to whom he was called on the tenth of the preceding month. With matter taken from these pustules, he inoculated several persons, and observed the disease to pursue a similar course and to exhibit similar phenomena to a case of actual vaccine pox under his care. He also after the termination of this new disease, he tested it, as usual, by variolous inoculation, with the same happy results as in other cases of vaccine pox. Upon inquiry he found that he had sometimes milked cows, and that these cows had been observed to have sore teats, and that the hands and face of the lad had been prepared for the reception of the disease by having been previously scratched in play with his companions.

Dr. Elisha North, of Goshen, in the State of Connecticut, who had bestowed much attention on the vaccine disease, found it among the cows of that neighborhood, and inoculated it with success.

In a letter of the twenty-fifth of May, 1801, to Dr. Edward Miller, he announced the discovery of cow-pox and stated that the inoculation of the disease had been tried in a number of instances with complete success.

Dr. Joseph Trowbridge of Danbury, in the State of Connecticut, in a letter to Dr. Samuel L. Mitchell, dated the sixth of July, 1801, communicated a similar discovery which he had made among the cows of that place. At that time he had inoculated three persons of his own family, and the disease produced by the inoculation exhibited all the appearences of the genuine vaccine pox. *Medical Repository, vol.* 5, *New York*, 1802, *p.* 92.

INTRODUCTION OF VACCINATION INTO THE UNITED STATES OF AMERICA.

Since the spreading of the small-pox on the earth, by the increased intercourse of mankind, its violence had been seriously felt by most civilized nations, frequently by the uncivilized people who traded with them. Dreadful were its ravages in Europe before the Asiatic method of lessening its fury by inoculation was introduced; and even after that time, and the adoption of this artificial and safe method of infecting the constitution with the venom, the benefits by inoculation were only partially experienced for it tended to keep alive the disease; the introduction of small-pox, even in the inoculated form, had been prohibited in some States by laws; and in others where no such prohibition existed, the expense and trouble of undergoing the disease, debarred many from submitting to its operation.

It seemed politic and proper to the governments of those parts of federated America, called the New England States, to prevent, by various legislative provisions, the introduction and spread of small-pox among their citizens in the natural way, and, in some, by inoculation. In consequence of such statutes, it was many years customary for persons in New England who wished to have the small-pox, to come to New York for the purpose of being inoculated, and, after their recovery, to return home. There was an inconvenience in this, but this was thought a mere trifle compared with the evil of its indiscriminate introduction. In sea-port towns, possessing a large share of foreign commerce, it had been found impossible to exclude this malady altogether; and in spite of all possible precautions, the contagion would, at certain times, be secretly introduced. To relieve themselves, in some degree, from the perpetual anxiety of having the small-pox spread among them in the *natural* way, the inhabitants of the town of Boston underwent a general inoculation, by common consent.

Dr. Benjamin Waterhouse, of Boston, who had previously published an instructive account of the various regulations concerning small-pox inoculation, was the first to describe to and urge upon his fellow citizens of New England, the great discovery of Edward Jenner.

INTRODUCTION OF VACCINATION INTO THE NEW-ENGLAND STATES, MORE ESPECIALLY INTO BOSTON, MASSACHUSETTS BY DR. WATERHOUSE.

Early in the year 1799, Dr. Jenner's work on the variola vaccine reached the shores of North America.

Dr. Lettsom transmitted a copy of it to Dr. Waterhouse, Professor of the Theory and practice of Physic in the University of Cambridge, Massachusetts. Dr. Waterhouse was not slow to estimate the advantage of the

scovery, and he published in the Columbian Sentinel of March 12, 1799, hort account of cow-pox. The article was headed "SOMETHING CURIOUS THE MEDICAL LINE." Not long afterwards he brought the subject be- e the American Academy of Arts and Sciences. John Adams, President the United States, who was likewise President of the Academy, was at e meeting and received the communication in a manner worthy of his alted position as the head of a great and free people. and the patron of ery useful art and science.

After several unsuccessful attempts to obtain cow-pox matter from Eng- d, Dr. Waterhouse at length succeeded in getting some from Dr. Hay- th, of Bath, who forwarded it from Bristol. It was procured from Dr. ner's stock by Mr. Creaser. With this matter Dr. Waterhouse inocu- d seven of his children, six of whom went through the disease in the al manner. In order to confirm the doctrine of the prophylactic powers the vaccine virus, he resolved to have his children inoculated with small- matter in the most public manner. With this intention, he wrote to Aspinwall, Physician to the Small-pox Hospital in the neighborhood of ton, requesting him to inoculate the children. This gentleman assented he proposal. Three of the children were sent to the Small-pox Hos- l. One of them, twelve years old, was selected for the trial. Active ll-pox matter was inserted by two punctures; an infected thread was wise drawn through the skin, and the patient then left in the hospital. the fourth day there was some slight appearance of infection; but it d away and left no traces of its action.

he successful vaccinations in the family of Dr. Waterhouse soon turned tide of popular feeling in favor of cow-pox.

vessel arrived from London at Marblehead. A common sailor on board w supposed to have the cow-pox. Matter was accordingly taken from hi and was used extensively. It was soon discovered that small-pox m er had been employed, and that disease spread rapidly through the nei hborhood.

he occurrence at Marblehead led Dr. Waterhouse to believe that the va ine virus had degenerated. He therefore sent a very urgent request to Dr Lettsom, begging him to apply to Dr. Jenner for a fresh supply. Dr. Je er complied with his request, and the matter which he sent out arrived ea in the spring of 1801. Dr. Waterhouse forwarded some of the mat- to President Thomas Jefferson, in whose hands it completely succeeded.

homas Jefferson did not think it beneath him to set an example to his fel -citizens. In the course of July and August, Jefferson, with his son- in- , vaccinated, in their own families and in those of their neighbors, nea y two hundred persons.

he estimate in which Mr. Jefferson held the discovery of Dr. Jenner, is sh n by the following letter:

MR. JEFFERSON TO DR. JENNER.

MONTICELLO, Virginia, May 14, 1806.

—I have received the copy of the evidence at large, respecting the dis very of the vaccine inoculation, which you have been pleased to send me nd for which I return you my thanks. Having been among the early co rts of this part of the globe to its efficacy, I took an early part in rec mending it to my countrymen. I avail myself of this occasion to re you my portion of the tribute and gratitude due to you from the wh human family. Medicine has never before produced any single im- pro ment of such utility. Harvey's discovery of the circulation of the blo was a beautiful addition to our knowledge of the ancient economy;

but on a review of the practice of medicine before and since that epoch, I do not see any great amelioration which has been derived from that discovery. You have erased from the calendar of human afflictions one of its greatest. Yours is the comfortable reflection that mankind can never forget that you have lived; future nations will know by history only that the loathsome small-pox has existed, and by you has been extirpated. Accept the most fervent wishes for your health and happiness, and assurances of the greatest respect and consideration.

TH. JEFFERSON.

The following extract from a letter of Jefferson addressed to Dr. Waterhouse, illustrates the careful manner in which he studied the progress and varieties of the cow-pox.

"WASHINGTON, January 14, 1802.

"I have waited till I could inform you that some variolous, after vaccine, inoculations have proved that I had preserved the matter of the kine-pox in its genuine form. Dr. Coxe, of Philadelphia, has ascertained this, having received his matter from hence. To this is added your information that the matter I sent you produced the genuine disease, and consequently those in Virginia who received the matter from me are in security.

"Knowing how little capable the people in general are of judging between genuine and spurious matter from their appearance, or that of the sore, I endeavored in the course of inoculations at Monticello to find some other criterion for their guide. With this view, I was very attentive to discern whether there be not *a point of time*, counting from vaccination, when the matter is genuine in all cases; I thought the *eight times twenty-four hours* furnished such a point; I governed myself by it, and it has been followed here successfully by Dr. Gant; but your experience is so much greater, can inform us whether this rule is a sure one, or whether any other point of time would be still more certain. To the eye of experience this is not necessary; but for popular use it would be all important; for otherwise the disease degenerates as soon as it gets into their hands, and may produce a fatal security. I think some popular criterion necessary to crown this discovery."

In answer Dr. Waterhouse quoted to Jefferson, the opinion of Dr. Jenner, and fixed the time at "EIGHTH TIMES TWENTY-FOUR HOURS."

JOHN QUINCY ADAMS TO DR. JENNER.

BOSTON, JULY 13, 1802.

The following is the letter of Mr. Adams announcing the election of Dr. Jenner as a member of the American Academy of Arts and Sciences.

Sir—I have the honor of enclosing herewith a certificate of your election, by an unanimous vote, as a member of the American Academy of Arts and Sciences, and, in transmitting this testimonial of respect from my countrymen, I am sure of expressing their sentiments when I add that never since the institution of this society have its members enjoyed a more genuine and universal satisfaction, by the accession of a new associate, than when they acquired the privilege of reckoning among their number the name of Dr. Jenner. I am, very respectfully, sir, your very humble and obedient servant.

JOHN QUINCY ADAMS.

Corresponding Secretary to the Academy of Arts and Sciences.

Dr. Benjamin Waterhouse* is justly regarded as the first person in Amer- who successfully imported and inoculated the vaccine disease; and his ertions to introduce, disseminate and vindicate this inestimable substi- te for the small-pox, have given him a just and elevated distinction ong those who have signalized their zeal in the cause of humanity.

TRODUCTION OF VACCINATION INTO THE SOUTHERN STATES, BY THOMAS JEFFERSON, OF VIRGINIA.

n the preceding observations upon the history of vaccination in the w England States, we have presented the outline of the efforts of Water- se and Jefferson to establish the value and promote the practice of vac- ation amongst the citizens of the American Union.

he subject, however, is of such importance to sanitarians, physicians a legislators, that we record the following original documents, as given t he medical profession by Dr. Henry A. Martin, in his valuable memoir, titled, "*Jefferson as a Vaccinator:*"†

he first American vaccination was made July 8, 1800. By the first of September Waterhouse had vaccinated "about fifty persons of different ages, sexes and conditions," a "public attention was thoroughly excited." From "all parts of New England" he ived "very numerous letters requesting further information, as well as a supply of er for carrying on the inoculation."

ith Waterhouse's announcement of the successful vaccination of his family, and the ough and triumphant test and proof of its value as a perfect *prophylactic* of *variola*, labors and troubles began; labors and troubles to be continued through many years, ly thankless and unrewarded, but performed and overcome with wonderful energy, usiasm and wisdom. Innumerable were the inquiries and demands for vaccine virus, although he was untiring in his efforts, innumerable the complaints, because all not answered and every demand not immediately gratified.

the secular press, in the rarely appearing issues of medical journals, in every avail- way he ceaselessly cautioned the profession to be careful to follow *exactly* the pre- nd admirable rules laid down by Jenner, not one of which has failed to withstand st of time, or to survive the antagonistic doctrines of innumerable theorists. Over ver again, he repeated, and enforced the repetition with much ability and eloquence estimable "GOLDEN RULE" of Jenner already referred to; adhering to which, ex- one can hardly go amiss, and departing whence has been the fertile source of an ulable amount of evil.

s not too much to say, that, with a precise and accurate knowledge of the develop- from day to day, of the *vesicle* of true *vaccina*, not only from its first appearance formation of the *areola*, but from the decline of that efflorescence until the spon- us fall of the scab, and of the true characteristics of the latter as well as of the sc which its fall reveals, and an inflexible determination to observe the "GOLDEN R " the practitioner possesses all the knowledge and principle necessary to make a su sful and intelligent vaccinator.

erhouse's cautions and labors were unheeded, misjudged and futile.

is words: "But these repeated cautions were disregarded by the young and san- practitioner, who saw nothing but regular cases, little trouble and great profits. se whom it concerns will not attend to what is written expressly for their inform- they must alone be answerable for the consequences. There are cases where igno- is converted into a crime.

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* Prospect of Exterminating the Small-pox, being the History of the Variolæ Vaccinæ or Kine-pox, commonly called the Cow-pox, as it has appeared in England; with an account of a series of Inoculations performed for the Kine-pox in Massachusetts. By Benjamin Waterhouse, M. D., Fellow of the American Philosophical Society, Academy of Arts and Sciences, etc., etc. Cambridge, Hilliard; 8 vo, p. 40. 1800.

A Prospect of Exterminating the Small-pox. Part 2. Being a Continuation of a Narrative of Facts concerning the Progress of the New Inoculation in America; together with Practical Observations on the Local Appearance, Symptoms, and Mode of Treating the Variolæ Vaccinæ, or Kine-pock, etc. By Benjamin Waterhouse, M. D., Professor of the Theory and Practice of Medicine in the University of Cambridge. 8 vo., pp. Cambridge, Hilliard; 1800.

† North Carolina Medical Journal. Thomas D. Wood, M. D., Editor, Wilmington, January, 1881, vol. 7, No. 1, pp. 1-34.

The medical profession is indebted to the learned editor of the North Carolina Medical Journal for the presentation and publication of valuable articles relating to vaccination.

"Perceiving that my reiterated warnings were misconceived and misrepresented, and finding some professional gentlemen in the country so wrapt up in ideas of extreme simplicity, that they encouraged women and children to inoculate each other, I ceased from further expressions of that kind, and endeavored to content myself with predicting the consequences.

"During this period, viz: the autumn of 1800, a singular traffic was carried on in the article of *kine-pock matter*, by persons not in the least connected with the medical profession; such as stage-drivers, peddlers, and in one instance the sexton of a church. I have known the shirt sleeve of a patient, stiff with the purulent discharge from a foul ulcer, made so by unskillful management, and full three weeks after vaccination, and in which there could have been none of the specific virus; I have known this cut up into small strips, and sold about the country as genuine kine-pock matter, coming directly from me. Several hundred people were inoculated with this caustic morbid poison, which produced great inflammation, sickness, fever, and in several cases *eruptions*, with a greater disturbance of the system than what occurs in the true disease. It is worthy of remark that I could not influence these people to believe that they had *not* passed through the true disease, and that they were *not* secure from the small-pox. So true it is, that a man need not despair of making the common people believe anything *but* TRUTH! That vagrant quacks should stroll about the country, inoculating for half a dollar a head, and some for less, is not quite so surprising as that they should, in such a country as ours, find people weak enough to receive it from such hands! This imprudence ought not, however, to be attributed to the common people alone. Many young practitioners in country villages come in for a share of it. Not a few first inoculated themselves, and then others, without having read more than the newspaper publications, and some not even those, and were looking out for eruptions, and foretelling appearances and symptoms that are never attached to the disease; and if any very disagreeable occurrence arose, in the course of this imprudent practice, the odium reverted to me."

Following this is given a narrative of the terrible catastrophe resulting from all this reckless, ignorant, presumptuous tampering with a new and as yet a very imperfectly known practice, at Marblehead, a large Massachusetts town, an event which had a partial parallel at Norfolk and Portsmouth, in Virginia, and in other parts of the country. The result of all this malpractice and of an imperfect knowledge of the best methods of preserving "*stored*" vaccine virus was extreme and rapid deterioration, and, at last, entire loss of the first supply of true vaccine lymph in America.

"Very early in the spring of 1801" Waterhouse received "a fresh supply of *virus* from England from Drs. Lettsom and Jenner, and as soon after, more from Dr. Pearson, Dr. Woodville, Mr. Ring, Mr. Wachsel, Mr. Kerre, Sir Granville Temple and the Vaccine Institution of London, and also from Dr. Haygarth and Mr. Creaser, of Bath, and Mr. Dunning, of Plymouth Dock."* "Previous to this second importation," he writes, "I had reason to believe that the true *virus* had become extinct in America. *The inoculation was, however, carried on here and there, in the country, with such matter as they had.*"†

Those ample supplies were used immediately with prompt and perfect success, the narrative of which is given with a very admirable commentary on the contrast between the regularity and mildness of the development of the *true* and *protective* disease in contrast with the irregularity and violence of the phenomena and symptoms of that totally unprotective *spurious* disease, *apt* to result from the use of lymph taken from the vesicle after the formation of the *areola* and *sure* to follow the inoculation of decomposed or decomposing pus, but which many of Waterhouse's contemporaries, who misjudged his motives and disregarded his repeated cautions, had pronounced perfect and admirable developments of *vaccina*. All this is extremely interesting and might be republished and pondered even now with profit. The disasters and innumerable annoyances accompany the use and great abuse of the first importation of efficient virus determined Waterhouse to exercise the greatest caution in selecting those to whom he should distribute, what he calls the "second importation" of virus.

Vaccination had not yet been introduced into the Southern States, but, in his own words:

About this time (the spring of 1801) I received a number of letters from a variety of people in the Southern States, especially from Virginia, expressing a strong wish to be better acquainted with the kine-pock, and a desire to introduce this benign remedy into

*I have given Waterhouse's long list of English physicians and institutions supplying this "second importation" of virus, merely to illustrate the great extent of his European correspondence, as affording a slight indication of the arduous nature of his labors, as a missionary of vaccination, by those who were above all others, competent to criticise and judge.

†The *italics* are mine. The employment of dubious vaccine virus, in the absence of any State or public institution whence perfectly reliable and *gratuitous* supplies might be always obtained, on a sort of theory any false, in vaccination at any rate, that a poor remedy, or rather pretence of remedy, is better than none at all, has always been one of the great evils of America, and the cause directly of a vast amount of imperfect or quite illusory protection "protection," and *indirectly*, both by failure to afford immunity from small-pox and by the production of "bad arms" (the "loathsome hideous eating ulcers," "running sores," "disgusting eruptions," etc., of the anti-vaccinists) very serious injury to the cause and reputation of vaccination in this country.—H. A. M.

nat extensive region. As most of the writers were entirely unknown to me, I was at a ss how to act. I might deny a physician of character, and I might entrust it to a per- n who had none. Some untoward occurrences in the past year rendered me cautious; r I had unknowingly encouraged mere *speculators*. I use that word in its modern and degenerate sense. While doubting what course to take, the right road opened to my ew.

"I had heard that President Jefferson was favorably impressed by my first announcia- on of the Jennerian discovery and practice. Indeed, the following letter, written in nsequence of transmitting him a copy of my pamphlet on this subject, sufficiently tes- fies it:

WASHINGTON, December 25, 1800.

"*Sir*,—I received last night, and have read with great satisfaction, your pamphlet on e subject of the kine-pock, and pray you to accept my thanks for the communication it.

"I had before attended to your publications on the subject in the newspapers, and took ch interest in the result of the experiment you were making. Every friend of humanity must look with pleasure on this discovery, by which one evil more is withdrawn m the condition of man; and must contemplate the possibility, that future improvents and discoveries may still more and more lessen the catalogue of evils. In this line proceeding *you deserve well of your country;* and I pray you accept my portion of the bute due to you, and assurances of high consideration and respect, with which I am your most obedient, humble servant, "THOMAS JEFFERSON."

Copy.]

Dr. Waterhouse, Cambridge.*

Hearing by some gentlemen direct from the seat of government that the President hed for still more information and that he was desirous to see the practice introduced Virginia and the other Southern States," Waterhouse "sent him the vaccine virus painted representations of the pustulet in all its stages on the white man and on the lican." This precious package was accompanied by a long (seven pages in Waterse's book) letter, excellently written and giving a masterly *resume* of the whole subof vaccination. A foot note informs us that this letter was repeated in many manupt copies which were widely circulated "at the southward" and it doubtless conled the first *reliable* information on that subject received by many a Southern practier. Although this letter could hardly fail to interest Southern physicians, it would opy too much space in a paper which has already far exceeded limits originally inled.

he following is Jefferson's answer. At the bottom, a note intimating that Jefferson's letter had been considered a precious and grateful tribute to Jenner and, as such had n transmitted to him, is in the writing of Waterhouse:

WASHINGTON, June 26, 1801.

our favor of the eighth instant came safely to hand with the several matters accomying it; as the longer the vaccine matter should be unemployed, I knew the chance s success would be the less. I thought it would be more likely to answer your benevo-

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his is the letter which, as a note on the margin of the second letter (the first *fac-simile* in the hand ng of Waterhouse informs us was sent to Jenner, and, of course, it is not to be found in series of *fac-es*.

Pustule"—Waterhouse, here and elsewhere, uses the word "*pustule*" in describing the induced erupf *vaccina*, rather than to appear, with what might be called, captiousness, to differ from Jenner and English writers. The eruption of vaccina is not a pustule at *any* stage of its development. When isease pursues a regular normal typical course, pus is never discoverable *in* the *vesicle*. After the tion of the *areola* pus exists in the tissues *outside* the *vesicle* as an accompaniment of the processes by the cutaneous slough of which the crust is (with the desicated lymph) composed is cast off and the teristic indellible scar is produced. Waterhouse knew this perfectly, as is evident from the following ote to page 6, of the second part of his "Prospect of Exterminating the Small-Pox: "By the *pustule*, ritish writers mean the circular sore, or vesicle made in the arm by inoculation; and not those erupthat have, in a few instances, appeared in places remote from the inoculated part. This difference in raseology has misled some among us. It ought not, strictly speaking, to be called *pustule*, until its nts have become *purulent*. The eruptions on the udder of the cow are more of *phylctine* than of the *at* kind." It may be usefully added that pus may appear *in* the vesicle, when it does it is as a result ary or other causes and resulting inflammation and deterioration but this is not the regular normal or course, such a contaminated fluid is not fit to use for vaccination, but this fluid, a mixture of vaccine nd pus, has been used times without number and even *pus*, quite unmixed with virus. We can well w easily, by men, who regarded the *vesicle* as a *pustule*, a something *normally* secreting pus, and those lopted the views of Coxe and others and collected material for their *inoculations* (they could not ly be called *vaccinations*) from the *site* of the vesicle so long as that *site* yielded or could be *compelled* a fluid of almost any kind. The fact, for it *is* a fact, that a normal perfect vaccine scab is very sure d material for *perfect* vaccination was thought by Coxe and his school (whose name was and is) to triumphantly demonstrate the position that the above practice is quite free from objection. It be extremely easy to exhibit the fallacy of this supposed proof and show that while a perfect typic a crust, from a healthy *vaccinifer*, generally affords excellent material for vaccination *fluid* taken from ccine vesicle *after* the decline, even after the full formation of the *areola* is extremely *apt* to be the orst and although such fluid *may* and often *does* induce perfect *vaccina*, it should be always declined.

H. A.M.

lent views by having it employed here rather than by risking it by a further mission to Virginia. I, therefore, put it immediately into the hands of Doctor Gantt, a long established, judicious and successful physician of this place, together with your letter and the pamphlets and papers accompanying it. It turns out that it had still been too long unemployed; for of numbers inoculated with it from the thirteenth to this time, no one appears to have taken the infection. In the meantime a great anxiety is produced here to obtain a successful inoculation. I know not, however, how it will be obtained, unless you could continue your goodness so far as to inclose by post new matter two or three times successively until we can inform you that it has at length taken. You need not be at the trouble of writing a word, for it is making it troublesome enough to you to put the matter under cover and into the postoffice. The benevolence which has dictated the measures for which we are indebted to you, will, I hope, plead my excuse on this new request. I pray you to accept assurances of my high consideration and respect.

TH. JEFFERSON.

N. B.—The first letter I received from Mr. Jefferson was dated December 29, 1800. It is printed in my Treatise, p. 2. I sent the original a present to Dr. Jenner, thinking, that coming from the Chief Magistrate of the Americans, it would not be unpleasing to the originator of vaccination.

Doctor Benjamin Warehouse.

The next letter informs Dr. Waterhouse that not only the first, but also a second supply of virus had failed, but expresses hope that the third will be more successful. This hope was to prove fallacious. The letter contains an *original* and excellent suggestion of Mr. Jefferson's for the preservation of *virus* in hot weather. It may be worth while to state that the present writer *thought* he had invented the same plan which he found very useful in the summer of 1872. He procured the manufacture of several hundred sets of glass vessels, similar to test-tubes, for distribution to his correspondents. Each set consisted of one vessel to contain the charged points and a larger one containing water in which the smaller vessel was enclosed. He spoke with considerable complacency of *his* invention for a month or two, only, at the end of time, to find that Mr. Jefferson was the inventor. This experience of the method convinced him that it is a good one and worthy of the recollection of practitioners wishing to keep virus from deterioration under certain circumstances, as for instance, on the office table during hot weather. It will be perceived that a small bit of this letter has been lost. There is no doubt the letters "tre" formed part of the word treatise, or that the reference is to a now quite rare pamphlet by Dr. J. C. Lettsom, entitled, "Observations on the Cow-Pock, London, 1801," a work principally noticeable for the portraits it contains of the four men then fully recognized as *the* leaders in the great innovation of vaccination, viz: Jenner, Pearson, Woodville and Waterhouse. The author believes the portrait of the latter and a poor reproduction of the same in the Boston *Polyanthos*, for May, 1806, to be the only engraved likenesses ever produced of a man, of whom, if men saw fit to thus honor their benefactors and saviors, rather than their disturbers and destroyers, the features would be perpetuated in "everlasting bronze" in every city of America.

A marginal note in the handwriting of Waterhouse and signed with his initials will be noticed.

WASHINGTON, July 25, 1801.

Dear Sir—Your favor of the seventeenth arrived last night, together with the new vaccine matter, which was immediately sent to Doctor Gantt. The second as well as the first supply of matter had failed. We hope the third will be more successful. How might it answer to put the matter into a phial of the smallest size, well corked, and immersed in a larger one filled with water and well corked. It would be effectually preserved against the air, and I doubt whether the water would prevent so great a degree of heat to penetrate to the inner vessel as does when it is in the open air. It would get cool every night, and shaded every day under the cover of the stage, it might perhaps succeed. I leave this place on the thirtieth instant for Monticello, being unwilling to risk myself on the tidewaters during the months of August and September. The situations which generate bilious complaints are most dangerous; my own is entirely exempt from that danger. Should you be so good as to continue forwarding matter till it succeeds, it will now be best to address the packages to Dr. Gantt, from whom, so soon as he succeeds, I shall ask a transmission of fresh matter to Monticello*, where I shall endeavor to introduce it. It will be a great service, indeed, rendered to human nature to strike off from the catalogue of its evils so great a one as the small-pox. I know of no one discovery in medicine equally valuable. Accept assurances of my great esteem and respect.

THOMAS JEFFERSON.

P. S. I re-endorse Doctor Letsom's treatise.

Doctor Benjamin Waterhouse.

* The matter sent agreeably to this direction was the first that succeeded.

The fourth letter acknowledges receipt of a further supply of virus, and refers to the terror with which small-pox was regarded in Virginia:

MONTICELLO, August 3, 1801.

Dear Sir—I had the pleasure of writing you on the twenty-fifth of July, acknowledging the receipt of yours of July 17, with the vaccine matter, which I immediately delivered to Doctor Gantt. Your favors of the twenty-fourth and twenty-fifth, sent to me at this place on the sixth instant, and the matter accompanying them was, by a skillful physician of the neighborhood, Dr. Wardlow, immediately inserted into six persons of my own family. We shall thus stand a chance of planting the disease here, where I imagine it will be as salutary as anywhere in the Union. Our laws indeed have permitted inoculation of the small-pox, but under such conditions of consent of the neighborhood as have admitted of not much use of the permission. That disease, therefore, is almost a stranger here and extremely dreaded. Will take care to inform you of the result of our operation. Accept my esteem and respect. THOMAS JEFFERSON.

Doctor Benjamin Waterhouse.

The fifth letter refers to still further receipts of *virus* and the use that was made of them, and also to two vaccinations made on the seventh of August which exhibited symptoms leading the writer to hope that success had been, at last, achieved.

MONTICELLO, August 14, 1801.

Dear sir—I wrote you on the eighth instant that your favors of July 24 and 26 had come to me here. Dr. Wardlow on the seventh inoculated two persons with the matter of the twenty-fourth and four with that of the twenty-sixth, the latter has no effect, but the two former show inflammation and matter. Some of them complain of pain under the arm-pit, and yesterday was a little feverish; the matter is of this size and form ·; the inflammation about an inch all round from the pustule. We have considerable hopes it has the true infection. Yesterday I received your favor of the first instant; Dr. Wardlow immediately inoculated five of the former subjects with it, and one other; he also inoculated one from the pustule above described. You shall be regularly informed of the progress and success of this business. I learn from Washington, indirectly, that Dr Gantt's cases have all failed; should ours succeed, he shall be supplied hence. I am very anxious to obtain the disease here. Accept my best esteem and respectful salutations.

TH. JEFFERSON.

Dr. Benjamin Waterhouse.

The next letter announces the undoubted success with which *all three different lots of virus, transmitted by Mr. Jefferson's method,* had been employed.

MONTICELLO, August 21, 1801.

Dear Sir—I had the pleasure of informing you on the fourteenth instant, that I supposed the inoculation of the kine-pox to have taken effect in two subjects, these were from the matter you were kind enough to send July 24; that of July 26 succeeded with the others; that of August 1, with four. On the fifteenth instant, we inoculated from the two first subjects, fifteen others; fourteen of whom very evidently have the infection, so that we have twenty of my family on whom the disease has taken, besides some recent inoculations; some of them have slight fevers, headache, kernels under the arms, and one only has a very sore arm; most, however, experience no inconvenience, and have nothing but the inoculated pustule, well defined, moderately filled with matter and hollow in the centre. I have this day impregnated some thread and half a dozen toothpicks, which I forward to Dr. Gantt, who writes me that his inoculations all failed. Dr. Wardlow, of this neighborhood, has so much other business, that he has been able to be with me only twice, however, I expect that the extent of my experiments will encourage the neighborhood generally. Engage him to introduce it in their families. To you they will be indebted for it, and I am sure they will be sensible of the obligation. Accept assurances of my great esteem and respect.

TH. JEFFERSON.

Benjamin Waterhouse.

Number seven announces the successful use in Washington, of *virus* sent there by Jefferson, the transmission of supplies to Richmond, Petersburg and other parts of Virginia, refers slightly to certain futile and disastrous previous attempts to introduce vaccination in Norfolk and Richmond which were followed by results similar to those observed at Marblehead and had done much to impede the introduction and progress of vaccination in the South, also to a proposed, but probably never executed publication of Dr. Waterhouse's long letter of instructions before alluded to.

MONTICELLO, September 17, 1801.

—I received by the last post your favor of August 28, and by the same a letter from Gantt, informing me that the matter I first sent him from hence had taken on three of the subjects into whom it had been inserted; that from these he had inoculated others,

so that they are now in full possession of the disease at Washington. I have also sent matter to Richmond, Petersburg and several other parts of this State, so that I have no doubt it will be generally spread through it, notwithstanding the incredulity which had been produced by the ineffectual experiments of Richmond and Norfolk. The first letter you were so kind as to write to me on the subject, and which contained a great deal of useful information, I put into the hands of Dr Gantt, and we concluded it would be useful to publish it as soon as the public should be possessed of the disease; it is still in his hands, and as you have been so kind as to permit us to make any use of it which the general good may require, I shall propose to him to have it published immediately on my return to Washington, which will be within a week from this time. It is just our countrymen should know to whose philanthropic attentions they will be indebted for relief from a disease which has always been the terror of this country. Accept my particular thanks for the great good, and assurances of my high esteem and respect

TH. JEFFERSON.

Dr. Waterhouse:

The eighth letter is a very interesting one, and affords a good idea of the care and wisdom with which Jefferson proceeded in this whole matter. It refers to the supply of virus, from his own Virginia vaccinations sent (through Mr. John Vaughn) to Dr. J. R. Coxe, of Philadelphia, by means of which vaccination was first introduced into that city. After the *fac-similes*, a letter from Jefferson, which accompanied this supply of virus, is inserted, reprinted from Dr. Coxe's volume on the cow-pox.

WASHINGTON, December 25, 1801.

Dear Sir—I am indebted to you for several favors unacknowledged. I have waited till I could inform you that some variolous after vaccine inoculation had proved that I had preserved the matter of the cow-pox in its genuine form. Dr. Coxe, of Philadelphia, has ascertained this, having received his vaccine matter from hence. To this is added your information that the matter I sent you produces the genuine disease, and consequently those in Virginia who received the matter from me are now in security. Knowing how little capable the people in general are of judging between genuine and spurious matter from their appearance, or that of the sore, I endeavored, in the course of my inoculations at home, to find some other criterion for their guide. With this view, I was very attentive to discover whether there be not *a point of time* counted from the vaccination, when the matter is genuine in all cases. I thought the eight times twenty-four hours furnished such a point; I governed myself by it, and it has been followed here successfully by Dr. Gantt, but your experience, so much greater, can inform us whether this rule is a sure one, and whether any other point of time would be still more certain. To the eye of experience this is not necessary, but for popular use it would be all-important, for otherwise the disease degenerates as soon as it gets into their hands, and may produce a fatal security. I think some popular criterion necessary to crown this invaluable discovery. Accept assurances of my great esteem and respect.

TH JEFFERSON.

Dr. Benjamin Waterhouse:

The ninth and last of the series in which any reference is made to vaccination, is dated fourteen years after its nearest predecessor. It is a long and admirable letter, and is introduced here because it contains an eloquent and consoling tribute to Waterhouse amid the sad harvest of vindictive, malignant persecution and ingratitude he was reaping for so much enthusiastic, untiring, sagacious labor for the benefit of humanity; the only harvest he ever gathered, the only one that has ever yet been garnered by the very highest and noblest benefactors of mankind.

How long the list! How sad the thoughts its consideration must awaken! But, thank God, there have always been men to whom the lives of Galileo, Spinoza, Luther, Paré, Vesalius, Servetus, Harvey, Jenner, Bell, Waterhouse, and a very large and shining company of such men seem more attractive, with all their wrongs, poverties, disappointments, persecutions and chagrins, than those of the sleek, well-fed *orthodox*, CONSERVATIVE, successful and honored mediocrities who always have been, who *are* and *must be*, their triumphant rivals, opponents, persecutors. It is one of the best and surest anchors and hopes of humanity that there always have been, and probably always will be, men to whom a consciousness of the honest and fearless expression of important TRUTH, however unpopular or unappreciated, will always be more fascinating than the success and wealth which is too apt to soften and sweeten the lives of the docile apostles of routine and error.

A brief extract from a letter from Waterhouse to his old friend Lettsom is here appropriate. It is dated May 8, 1810: "For the honor of my country, I am ashamed to tell Dr. Jenner how I have been treated by our Legislature" (that of the State of Massachusetts) "respecting remuneration. I have received nothing but abuse, nay, more, I have been intrigued out of my place as Physician to the United States Marine Hospital, with 500 sterling a year, and given me by Mr. Jefferson as a reward for my labors in vaccina-

on, and this merely in consequence of his going out and others coming in, so that, at fty-six years of age, I have now to contrive and execute some new plan to supply this ficiency. * * * * Were I a single man and without children I would to England; if not to live there, at least to die there. You do not knock a man on e head in Britain because he exerts himself more than his neighbors do. * * * ometimes one man influences and impels the sentiments and conduct of the public. I n not calculated by nature or habit to control intrigue."*

MONTICELLO, October 13.

Dear Sir—I was highly gratified with receipt of your letter of September first, by eneral and Mrs. Dearborne, and by the evidence it furnished me of your bearing up th firmness and perseverance against the persecutions of your enemies—religious, polit- al and professional. These last I suppose have not yet forgiven you the introduction vaccination and annihilation of the great variolous field of profit to them; and none them pardon the proof you have established that the condition of man may be ameli- ated, if not *infinitely*, as enthusiasm alone pretends, yet *indefinitely*, as bigots alone can ubt. In lieu of these enmities, you have the blessings of all the friends of human ppiness for this great peril from which they are rescued.

I have read with pleasure the orations of Mr. Holmes and Mr. Austin. From the former always expect what is good; and the latter has by this specimen taught us to expect e same in future from him. Both have set the valuable example of quitting the beaten ounds of the Revolutionary War and making the present state of things the subject of nual animadversion and instruction. A copious one it will be, and highly useful if pperly improved. Cobbet's address would of itself have mortified and humbled the ssack priests; but Brother Jonathan has pointed his arrow to the hearts of the worst them. These reverend leaders of the Hartford Convention nation it seems then are w falling out together about religion, of which they have not one real principle in ir hearts. Like bawds, religion becomes to them a refuge from the despair of their thsome vices. They seek in it only an oblivion of the disgrace with which they have ded themselves by their political ravings, and of their mortification at the ridiculous ne of the Hartford Convention. No event more than this has shown the placid char- er of our Constitution; under any other their treason would have been punished by halter. We let them live as laughing stocks of the world, and punish them by the ment of eternal contempt. The emigrations you mention from the Eastern States are t I have long counted on. The religious and political tyranny of those in power h you cannot fail to drive the oppressed to milder associations of men whose free- n of mind is allowed in fact as well as in pretence. The subject of their personal vings and caterwaulings is not without its interest to rational men. The priests e so disfigured the simple religion of Jesus that no one who reads the sophistications y have engrafted on it, from the jargon of Plato, of Aristotle, and other mystics, would ceive these could have been fathered on the sublime preacher of the Sermon on the nt. Yet knowing the importance of names, they have assumed that of Christians, le they are mere theorists, or anything rather than disciples of Jesus. Sone of them beginning now to sling off these meritorious trappings; their followers may take rage to make thorough work, and restore to us the figure on its original simplicity and uty. The efforts of this squabble, therefore, whether religious or political, cannot to do good in some way.

he visit to Monticello, of which you hold up an idea, would be a favor indeed of the order; I know, however, the obstacles of age and distance, and should therefore ne value on its vicarious execution. Should business or curiosity lead a son of yours isit this Sodom and Gomorrah of persons, Osgood and Gardener. Accept my wishes your health and happiness and the assurance of my great esteem and respect

THOMAS JEFFERSON.

he following is the letter with which Jefferson transmitted that supply of virus to Coxe, of Philadelphia, which, as before intimated, inaugurated vaccination in that It is printed from Waterhouse's book into which it was copied from Dr. Coxe's actical Observations on VACCINATION, or inoculation for the COW-POCK, Philadel- , 1802. Page 120, et seq."

WASHINGTON, November 5, 1801.

Dear Sir—I received on the twenty-fourth ult., your favor of the twenty-second, but not till this day that I am enabled to comply with your request of forwarding some e vaccine matter of Dr. Coxe. On my arrival at Monticello in July, I received from Waterhouse, of Cambridge, some vaccine matter taken by himself, and some which he the same time received from Dr. Jenner, of London. Both of them succeeded, and bited precisely the same aspect and affection. In the course of July and August, I

* and Letters of John Coakley Lettsom, London, 1817.

inoculated about seventy or eighty of my own family; my sons-in-law about as many in theirs, and including our neighbors who wished to avail themselves of the opportunity, our whole experiment extended to about two hundred persons. One only case was attended with much fever and some delirium; and two or three with sore arms which required common dressings. All these were from accidents too palpable to be ascribed to the simple disease. About one in five or six had slight feverish dispositions, and more perhaps had a little headache, and more of them had swelling of the axillary glands, which in the case of adults, disabled them from labor one, two or three days. Two or three only had from two to half a dozen pustules on the inoculated arm, and nowhere else, and all the rest only the single pustule where the matter was inserted, something less than a coffee-bean, depressed in the middle, fuller at the edge, and well defined. As far as my observation went, the most premature cases presented a pellucid liquor the sixth day, which continued in that form the sixth, seventh, and eighth days, when it began to thicken, appear yellowish, and to be environed with inflammation. The most tardy cases offered matter on the eighth day, which continued limpid the eighth, ninth and tenth days. Perceiving, therefore, that the most premature as well as the tardiest cases embraced the eighth day, I made that the constant day for taking matter for inoculation, say, eight times twenty-four hours from the hour of its previous insertion. In this way it failed to infect in not more I think than three or four out of the two hundred cases. I have great confidence, therefore, that I preserved the matter genuine, and in that state brought it to Dr. Gantt, of this place, on my return, from whom I obtained the matter I now send you, taken yesterday, from a patient of the eighth day. He has observed this rule as well as myself. In my neighborhood we had no opportunity of obtaining variolous matter, to try by that test the genuineness of our vaccine matter; nor can any be had, or Dr. Gantt would have tried it on some of those on whom the vaccination has been performed. We are very anxious to try this experiment for the satisfaction of those here, and also those in the neighborhood of Monticello, from whom the matter having been transferred, the establishment of its genuineness here will satisfy them. I am, therefore, induced to ask the favor of you to send me in exchange, some fresh variolous matter, so carefully taken and done up, as that we may rely on it; you are sensible of the dangerous security which a trial with effete matter might induce. I should add that we never changed the regimen nor occupations of those inoculated; a smither at the anvil continued in his place without a moment's intermission, or indisposition. Generally it gives no more of disease than a blister as large as a coffee-bean produced by burning would occasion. Sucking children did not take the disease from the inoculated mother. These I think are the most material of the observations I made in the limited experiment of my own family. In Aikin's book, which I have, you will find a great deal more. I pray you to accept assurances of my esteem and respect.

(Signed) "THOS. JEFFERSON.

"Mr. John Vaughan."

In conclusion, it is worthy of remark how very completely the mission of Waterhouse was accomplished. Through his *direct* means vaccination was introduced not only in Boston but in a very large proportion of the other cities and towns of America. The rest not *directly* supplied with their first *efficient* virus by Waterhouse obtained it through the agency of Jefferson. It is by no means too much to say that Waterhouse and Jefferson were the two men to whom the *introduction* of vaccination in America was *wholly* due. However actively many, as Coxe, Seaman, Scofield, and others labored, none even approximately approached these two in the success with which they propagated perfect vaccine virus and, directly or indirectly, supplied every considerable city and town of North America not only with their *first* efficient lymph but, over and over again, with fresh supplies when, as repeatedly happened through ignorance, neglect, or, more frequently, malpractice (mainly the result of following Coxe's teachings, and collecting virus after the appearance, even after the *decline* of the *areola*) the precious *contagium* was lost. It is, of course, not possible here to detail the facts on which this broad assertion is based. Enough that it is not rashly made, but as the result and outcome of careful study of data quite sufficiently full, although not accessible without difficulty. Let the assertion stand as one. When possibly it may come to be disputed it shall be proven.

This remarkable and unique success was due to Waterhouse, and from him Jefferson, being the sole recipient of supplies of virus from England. To very many other societies as well as individuals, ample supplies from Jenner and many of his earliest English disciples were repeatedly sent, but no record of any authenticity has been discoverable that any but Waterhouse and Jefferson succeeded in perpetuating vaccine of perfectly normal type such as alone could afford *virus* fit to be used in vaccination. The simple solution of this remarkable and quite exceptional success is to be found in the fact that Waterhouse was a true and faithful disciple of Jenner, that Jefferson was equally loyal to the Master and that both religiously observed his "golden rule;" while the practice of a very large proportion of American physicians was unfortunately influenced by teachings which criticised and even ridiculed that rule; teachings which have, even yet, fulfilled all their mission of evil and injury to the cause of vaccination in America."—*Martin.*

TRODUCTION OF VACCINATION INTO NEW YORK, UNITED STATES OF AMERICA.

The value of the labor of Dr. Jenner and Dr. Waterhouse, were acknowge by the physicians of New York, and more especially by Dr. Valine Seaman, Edward Miller, Wright Post, Samuel Borrowe, Samuel field, Samuel L. Mitchell, were appreciated in the first years of the eteenth century; and they induced a number of the prominent citizens New York, impressed with the importance of substituting the inoculan of the vaccine disease for that of the small-pox, to form an association, l to contribute to the establishment of a public institution, to *extend the antage of vaccine inoculation to the poor;—to maintain a permanent supply genuine matter for the use of that community, and to disseminate a knowle of vaccine inoculation among the physicians of the adjacent country.*

fter public meetings, held by the contributors for the purpose, they ned and adopted a constitution suited to their design; and then proceeded pursuance of the constitution, to elect the officers of the institution, n the following gentleman were elected Directors: James Watson, uel Browne, John Reese, Robert Browne, Samuel L. Mitchell, Isaac ks, Gilbert Aspinwall, William Moore, Thomas Buckley, Samuel Miller, let Seaman, Andrew Cock, James Robertson; Thomas Franklin, Treas-; Adrian Hegeman, Secretary.

he directors made choice of the following gentlemen to perform the ous duties assigned to their office by the constitution: James Watson, sident; Gilbert Aspinwall, Vice President.

edical Board.—Valentine Seaman, Edward Miller, Wright Post, Samuel wne; Samuel Scofield, Resident Surgeon.

suitable apartment was obtained and the Medical Board commenced ine inoculation.

a meeting of the contributors the following resolution, moved by Samuel Browne, was unanimously adopted, viz:

Resolved, That in testimony of the high estimation in which this meetf contributors hold the philanthropic and able exertions of Edward Jen M. D., F. R. S., etc., of London, and Benjamin Waterhouse, M. D., ssor of practice in the University of Crambridge, in Massachusetts, ive to the inoculation of the Kine-Pock, they are hereby appointed etual honorary directors of this Institution."—*Medical Repository, vol. 5, New York*, 1802, *p.* 346–7.

e Medical Profession of the United States were deeply indebted to the ed and eloquent editors of the Medical Repository, for the first full cientific reviews of the discoveries of Jenner, and the works of Pear-Woodville and others.

s. Samuel Latham, Mitchell, Edward Miller, and Elihu H. Smith, publi an account of Dr. Jenner's "Inquiry into the causes and effects of riolæ vaccinæ," in the second volume of the Medical Repository, p. hird edition.

ters from Dr. Pearson, as well as accounts of his work and that of oodville, were published in the Medical Repository, volume third, , 315, etc.

he same (third) volume of the Medical Repository, p. 310, it is stated r. George Pearson, of London, had transmitted in a letter to Dr. rd Miller a thread impregnated with the matter of the vaccine disfor the purpose of inoculation in North America, with a view to its s a substitute for the small-pox.

The readers of this valuable medical journal are informed as to the progress of vaccine inoculation in Europe and America. (See vol. 4, pp. 88, 176, 204, 321, 322, vol. 5, vol. 4, pp. 410, p. 205, etc.)

The vaccine matter received in New York during 1800, did not succeed according to the expectations of Dr. Edward Miller, and he expressed the opinion that the matter employed was not genuine. (*Medical Repository, vol. 4 p.* 321.)

For the introduction of vaccination into New York, the people were indebted to the persevering and philanthropic exertions of Doctor Valentine Seaman, who, on the twenty-second of May, 1801, procured virus from the arm of Governor Sargent's domestic, who was vaccinated in Boston by Doctor Benjamin Waterhouse, and fortunately arrived in New York, at the proper period for procuring the virus. With this infection Dr. Seaman inoculated several, and succeeding in communicating the genuine variolæ vaccinæ'

There had been virus received in New York, during the preceding winter, but unfortunately it gave rise to a spurious disease.

In January, 1802, an institution was established in New York for the purpose of vaccinating the poor gratis, and of keeping up a constant supply of the genuine matter. In this establishment Samuel Scofield,* M. D was appointed resident surgeon. This institution was subsequently connected with the New York City Dispensary, and a physician appointed for the express purpose of vaccinating such as applied for that purpose.

Dr. V. Seaman, Physician of the Kine-Pock Dispensary, reported to the trustees on the third of January, 1807: "That the practice of vaccination has been regularly attended to, and that by means of this establishment nearly eleven hundred have been inoculated; not one of whom has been known since to have taken the small-pox.

"During the fifteen years immediately preceding the introduction of the vaccine disease into this city, it appears, by a regular record preserved by the sextons, 5,756 persons were interred in the cemeteries of St. Paul's and Trinity, of which 610, which is upwards of the tenth part of the whole number, had died under the immediate operation of the small-pox. From the public obituary, since established by the corporation, we find that in the years 1805 and 1806, 4,595 persons have died in this city; 110 only which is less than one-fortieth part, was by the small-pox; where it may be fairly inferred, that during the last two years, the practice of vaccination has preserved 276 of our fellow citizens from falling victims to the most loathsome of all human maladies, while it does not form a single item on the bills of mortality. If individuals would attend reasonably to partake of the means now offered for their protection, it is more than probable, that in a little time the small-pox would only be heard of in history, and our country be freed from one of the most dreadful scourges."—*The Medical Repository, vol.* 4, *New York*, 1807, *p.* 430.

In order to determine the value of vaccination in New York, which from its geographical position, its extended commercial connections, and the vast multitudes of foreign emigrants passing through this great gate-way of the North American Continent, was the most exposed of all cities to the ravages of this pestilence, I consolidated from the official reports of the city the mortality during the period of half a century, immediately following the introduction of vaccination.

*"A Practical Treatise on Vaccine or Cowpock' by Samuel Scofield, M. D., one of the physicians of New York City Dispensary, and first Resident Surgeon of the New York Institution for the Inoculation the Cowpock." Embellished with a colored engraving representing a view of the local affection in its different stages. New York: Printed by Southerick & Pelsue, for Collins & Perkins, 1810.

tal Deaths from all Causes, and from Small-Pox, Measles, Scarlet Fever and Phthisis-Pulmonalis in the City of New York during a Period of Fifty Years, 1804-1853.

YEAR.	Total Deaths from All Causes.	DEATHS FROM			
		Small-Pox.	Measles.	Scarlet Fever.	Phthisis Pulmonalis.
1	2125	164	2	14	499
1	2344	62	0	4	462
1	2225	48	0	4	354
1	2312	29	1	2	464
1	2014	62	64	4	429
1	2108	66	2	9	413
1	2167	4	2	1	562
1	2524	117	2	0	595
1	2553	21	9	0	669
1	2283	2	35	1	562
1	1974	2	15	1	572
1	2507	94	18	0	618
1	2739	179	19	0	678
1	2527	14	20	3	574
1	3265	19	18	0	591
1	3176	0	10	5	577
1	3515	0	74	5	625
1	3542	0	109	3	715
1	3231	0	1	1	624
1	3444	18	117	2	683
1	4341	394	100	3	730
1	5018	40	53	10	843
1	4973	58	31	24	820
1	5181	149	172	4	829
1	5181	93	28	11	906
1	5094	16	91	188	880
1	5537	176	12	246	974
1	6363	224	39	258	1033
1	10389	89	290	221	1514
1	5746	25	38	179	1251
1	9082	233	212	418	1471
1	7082	351	82	174	1437
1	8009	173	442	202	1514
1	3732	164	288	579	1458
1	5053	91	79	257	1225
1	7953	68	133	158	1318
1	8474	332	185	391	1296
1	9115	200	113	360	1470
1	9176	181	60	416	1339
1	8693	117	118	223	1503
1	8875	21	51	224	1428
1	10483	125	136	63	1659
1	11318	141	17	114	1690
1	15788	53	275	142	1626
1	15919	544	77	93	1869
1	23773	326	125	266	2086
1	16978	231	324	311	1922
1	21924	562	320	627	2374
1	21601	407	246	613	2487
1	22702	656	134	454	2739
otal	364698	7131	4749	8398	55265

rom the preceding statistics we gather that out of a total of 364,698 ths from all causes (males, 198,432; females, 166,266; excess of males 66 or 19.35 per cent), occurring in New York during 50 years, 1804–3 inclusive, small-pox occasioned only 7131 deaths.

uring the same period measles occasioned 4749 deaths and scarlet fever 8; these two diseases occasioned 13,147 deaths, or nearly twice the ber caused by the more fatal pestilence small-pox.

hthisis pulmonalis caused 55,265 deaths or about eight times the num- redited to small-pox.

e must attribute this result, that is the comparatively small mortality small-pox to vaccination. Some estimate of the number of emigrants ing in from Europe may be formed from the fact that from May 5, 1847, e end of 1853, there arrived at New York, 1,627,174 white emigrants.

INTRODUCTION OF VACCINATION INTO PHILADELPHIA, PENNSYLVANIA.

In Philadelphia, Dr. John Redman Coxe made most laudable efforts to introduce the inoculation of the cow-pox into Philadelphia, Penn., and in 1802, he published his "*Practical Observations on Vaccination or Inoculation for the cow-pock.*" in which he duly appreciated the value of the discovery of Edward Jenner, and endeavored with a zealous and benevolent warmth, to recomemnd this safe and easy substitute for the small-pox.

Most of the leading facts and principles concerning the cow-pock, known and ascertained at the time, are noticed in this publication.

Much discussion and difference of opinion having arisen on the question how late in the disease it may be allowed to take matter for the purpose of inoculation, Dr. Coxe could not entirely agree with Dr. Edward Jenner, who enjoined it upon inoculators to consider the appearance of the efflorescence, as a sacred boundary which might not be trangressed. Dr. Coxe was inclined to believe, that while the fluid in the vesicle continues limpid, and the scab is not too far advanced, no inconvenience will arise from the use of the matter; and the point of time beyond which the matter is not ordinarily to be taken he supposes may properly be eight times twenty-four hours.

Dr. Coxe records his belief in the efficacy of vaccination in correcting the scrofulous diathesis, in removing certain cutaneous diseases, and curing whooping-cough and deafness.

Dr. John Redman Coxe published farther observations on vaccination in 1804. (See the Medical Repository, Second Hixade, vol. 1; New York, 1804; p. 122.)

Mr. Bryce, of Edinburgh, in his *Observations on the Cow-pox*, published in 1802, advocated the use of *the crust of the vesicle* after it falls from the arm; and also proposed a mode of ascertaining whether the constitution had been affected by the vaccine virus, by a double inoculation, the second being performed some days after the first.

Wm. Farquharson, James Bryce, A. Gillespie and J. Abercrombie, of the Vaccine Institution of Edinburgh, after recording 7140 vaccinations from February, 1801, to February, 1807, state that "by using the crust, the cow-pox has frequently been renewed at this institution, when the fluid virus had been lost, from the non-attendance of the children at the proper period of taking it."

From a report of Mr. Shoolbred, of Calcutta, it is shown that "by this mode of using the crust, the cow-pox had been renewed at the different out-stations in the Province of Bengal, at Prince of Wales Island, and at Port Marlborough, when the virus had been lost, and every means of transmitting it from Calcutta had proved ineffectual."—*Edinburgh Medical and Surgical Journal*, 1807; *vol.* 3, *p.* 253.

The following tables, consolidated from official sources, will present in a clear light the relations of small-pox to other diseases in Philadelphia; and will also clearly demonstrate the protective power of vaccination. These figures are of special value and force, when compared with those of London, England, previously recorded, illustrating the mortality occasioned by small-pox in that city during the seventeenth and eighteenth centuries, before the introduction of vaccination, when the population approximated to that of Philadelphia, during the period under observation:

...aths in Philadelphia, Penn., from Small-Pox, each year, from 1807 *to* 1882, *inclusive, with the Average Population of each year and Deaths to every* 1000 *Persons Living.*

Years.	Population.	Deaths from Small-Pox.	Deaths from Small-Pox in 1000 Living Persons	Years.	Population.	Deaths from Small-Pox.	Deaths from Small-Pox in 1000 Living Persons
....	.....	32	0.27	1845.....	....	190	0.73
... .		145	1.28	1846.....	.....	251	0.61
....		101	0.90	1847.....		9	0.02
....	111,210	34	0.30	1848.....		100	0.24
.....		117	1.04	1849	408,762	152	0.37
.....	.....	....	.....	1850 ...		40	0.09
.....	....	....	.....	1851.....		216	0.52
....	.....	.....	.....	1852.....	.....	427	1.04
.....	.....	.....	.....	1853.....	.....	57	0.13
... ...	.....	97	0.77	1854.....	.....	40	0.09
....	.....	52	0.30	1855.....	.....	275	0.67
.....	.....	8	0.05	1356.....	.....	390	0.68
.. ..		1	.....	1857.....	....	65	0.11
... .		.....	.....	1858.....		7	0.01
.....	137,097	.....	....	1859.....		2	0.003
.....		.....	.....	1860.....	565,529	57	0.10
... .		160	1.16	1861.....		758	1.34
.....	.....	325	2.37	1862		264	0.46
.....	.....	6	0.04	1863.....	.....	171	0.30
....	.....	3	0.01	1864	....	260	0.45
.....		100	0.52	1565.....	.....	524	0.92
.....		107	0.56	1866.....	.....	144	0.21
... .	188,797	81	0.42	1867	.....	48	0.07
.....		86	0 45	1868.....		48	0.07
.....		14	0.07	1869.....		6	0.008
....	.....	37	0.19	1870....	674,622	9	0.01
.....	.....	150	0.82	1871.....		1,879	2.78
... .	.....	195	1.03	1872.....		2,585	3.83
... ...	.....	101	0.53	1873	.....	39	0.05
... .	... .	76	0.33	1874.....	.....	15	0.02
.... ..	.....	79	0.34	1875.....	.....	54	0.08
.....		42	0.16	1876.....	.....	407	0.45
....		5	0.01	1877.....		155	0.17
.....	268,034	63	0.24	1878.....		.....	.....
...		259	1.00	1879	846,980	6	0.006
.....		156	0.60	1880.....		429	0.05
.. ...	....	36	0.13	1881.....		1,336	1.57
. ...	.....	17	0.06	1882.....	.....	314	0.03
...tal deaths from Small-pox for 76 years.....						13,813	

...om the preceding table it is established that during the past seventy ...ears small-pox has occasioned deaths in Philadelphia in sixty-eight ye..., and that in only eight years was the disease entirely absent; and th... notwithstanding its almost constant presence, it occasioned only 13,-... deaths during the entire series of years embraced in the table. Dur-...he first thirty-nine years, 1807–1845 inclusive, small-pox occasioned ... deaths, and in the last thirty-seven years, 1846-1882 inclusive, 11,532 de...s; total seventy-six years, 13,813.

...e apparent increase of deaths during the last seven years from small-...pox must be referred chiefly to the increase of population; during the first thir...-nine years (1807-1845) the population of Philadelphia ranged from 11...0 to 268,034. and during the last thirty-seven years (1846-1882) from ...2 to 846,980.

...t small-pox has played but a secondary part in the mortality of Phil-...hia, will be evident from a comparison with the following statistics:*

* ...h Officer's Annual Report, City of Philadelphia, 1882. Philadelphia, 1883; p. 201, p. 2.

Table showing the ratio of deaths, with population in Philadelphia, Pennsylvania, during th past twenty-two years.

YEARS.	Population.	Deaths from all causes.	Deaths to 1000 persons.	Persons livin to one death.
1861	576,408	13,540	23.49	42.57
1862	587,287	13,864	23.60	42.36
1863	598,166	14,220	23.73	42.06
1864	608,045	15,875	26.10	38.30
1865	618,924	15,633	25.25	39.59
1866	620,803	15,362	22.80	40.99
1867	640,682	12,660	19.76	50.60
1868	651,561	13,391	20.39	48.65
1869	662,440	13,428	20.27	49.33
1870	†674,022	15,317	22.72	44.00
1871	700,000	15,485	22.12	45.20
1872	725,000	15,238	26.19	38.18
1873	750,000	15,224	20.29	49.26
1874	775,000	15,987	19.66	50.86
1875	800,000	17,805	22.25	44.93
1876	825,594	18,892	22.88	43.69
1877	850,856	16,004	18.81	53.16
1878	876,118	15,743	17.97	55.65
1879	901,380	15,473	17.17	58.25
1880	†846,980	17,711	20.91	47.83
1881	868.000	19.515	22.48	44.47
1882	886,539	20,059	22.62	44.19

Note—†United States census, the intervening years, population estimated.

Total Deaths from Diphtheria and Scarlet Fever in Philadelphia, Pennsylvania, during th past Fifteen Years—1868-1882.

YEARS.	Total Deaths Diphtheria.	Total Deaths Scarlet Fever.	YEARS.	Total Deaths Diphtheria.	Total Death Scarlet Feve
1868	119	224	1876	708	328
1869	182	799	1877	458	379
1870	172	953	1878	464	554
1871	145	262	1879	321	336
1872	150	174	1880	323	291
1873	110	319	1881	457	486
1874	170	461	1882	933	310
1875	652	1,032			

*Health Officer's Annual Report, 1882, p. 4.

Total Deaths from Consumption, Typhoid Fever, Scarlet Fever and Small-pox in Philadelphi Pennsylvania, during Twenty-one Years—1862-1882.

YEAR.	DEATHS FROM				YEAR.	DEATHS FROM			
	Consumption.	Typhoid fever.	Scarlet fever.	Small-Pox.		Consumption.	Typhoid Fever.	Scarlet Fever.	Small-Po
1862.	1949	654	461	264	1873..	2291	364	319	39
1863.	1953	486	275	171	1874..	2304	491	461	15
1864.	2089	648	349	260	1875..	2359	419	1032	54
1865.	2026	773	624	524	1876..	2776	761	328	407
1866.	1944	381	491	144	1877..	2349	542	379	155
1867.	1947	367	367	48	1878..	2491	404	554	6
1868.	1995	395	224	48	1879..	2481	344	336	429
1869	1975	373	799	6	1880..	2692	498	291	1336
1870.	2308	409	953	9	1881	2768	645	486	314
1871.	2337	313	262	1879	1882..	2809	650	310	
1872.	2330	369	174	2585					

The deaths from typhoid fever alone numbered, in twenty-one years 10,256.

The remarkable exemption of the citizens of Philadelphia, from the ravages of small-pox during the nineteenth century, may be justly attributed to the faithful advocacy and efficient practice of vaccination, by her learned and philanthropic physicians.

SMALL-POX, AND THE INTRODUCTION OF VACCINATION INTO SOUTH CAROLINA.

Small-pox committed fearful ravages amongst the North American Indians who were protected neither by inoculation nor subsequently by vaccination. Entire nations and tribes disappeared—swept away by small-pox, without leaving any record of their sufferings. This fearful scourge was introduced into Mexico by the Spaniards in 1520, and at various subsequent periods by the French and English colonists, has been the chief agent in the destruction of the aboriginal inhabitants of North America. The powerful nation of the Katahbas, which, in the early history of South Carolina, numbered several thousand warriors, in 1743 could muster scarcely 400 men. In 1738, small-pox destroyed one half of the Cherokee nation; and the Muskohgees, Uchees, Shawnese, Choctaws, Chickasaws, Natchez, and many other tribes have suffered to an equal extent.

In describing the Sewees of South Carolina, John Lawson says: "These Sewees have been formerly a large nation, though now very much decreased, since the *English* hath seated on their land, and all other nations of *Indians* are observed to partake of the same fate where the *Europeans* come, the *Indians* being a people very apt to catch any distemper they are infected withal; the small-pox has destroyed many thousands of these nations, who, no sooner than they are attacked with the violent fevers and inward burning which attends that distemper, fling themselves overhead in the water in the very extremity of the disease; which, shutting the pores, hinders a kindly evacuation of the pestilential matter and drives it back, by which means death most commonly ensues—not but in other distempers, which are epidemical, you may find among them practitioners that have extraordinary skill and success in removing those morbific qualities which affect them."

John Lawson visited Carolina in 1700. *A New* VOYAGE *to* CAROLINA, *containing the exact description of that country, together with the present state thereof, and a Journal of a Thousand Miles, traveled through several Nations of Indians, giving a particular account of their customs, manners, etc. By John Lawson, Gent, Surveyor General of North Carolina. London: Printed in the year* 1709; *p.* 10, *p.* 224.

In another portion of his "New Voyage to Carolina," John Lawson says with reference to the Indians of North Carolina:

"The small-pox has been fatal to them; they do not often escape when they are seized with that distemper, which is a contrary fever to which they ever knew. Most certain, it had never visited *America* before the discovery thereof by the Christians. Their running into the water, in the extremity of this disease, strikes it in and kills all that use it. Now they are becoming a little wiser, but formerly it destroyed whole towns without leaving one Indian alive in the village." p. 223-224.

A letter from the Governor and Lord's Proprietors, dated March 12, 1698, states:

"We have had the small-pox amongst us nine or ten months, which hath been very infectious and mortal; we have lost by the distemper 200 or 300 persons. And on the twenty-fourth of February last, a fire broke out in the night in Charlestown, which hath burnt the dwellings, stores and out-houses

of at least fifty families, and hath consumed (it is generally believed) in house and goods the value of £30,000 sterling." In a subsequent letter, date April 23, 1698, they state that the small-pox still continued, but was no so fatal as in the cold weather, and that a great number of Indians had fe victims to the disease.*

Dr. David Ramsay is evidently in error when he states that the year 1700 and 1717 were the dates of the two first attacks of small-pox i Charleston; it is evident from the preceding facts that the small-pox pr vailed in 1697 and 1698.

Dr. Ramsay also appears to be in doubt about the date of the first appea ance of yellow-fever in Charleston, for, in his Medical History of Soutl Carolina from 1670 to 1808, he says that "in the year 1699 or 1700, in add tion to the calamities resulting from a desolating fire and a fatal epidemi small-pox, a distemper broke out in Charleston which carried off an incred ible number of people, among whom were Chief Justice Bohun, Samuel Marshall, the Episcopal clergyman; John Ely, the Receiver General; Edwar Rawlins, the Provost Marshal; and almost one-half of the members of th Assembly. Never had the colony been visited with such general distress an mortality. Some whole families were carried off, and few escaped a shar of the public calamities. Almost all were lamenting the loss either of thei habitations by the devouring flames, or their friends and relatives by thi disease, or the small-pox. Anxiety and distress were visible on ever countenance. Many of the survivors seriously thought of abandoning country on which the judgment of heaven seemed to fall so heavy. Dr Hewatt, from whom the preceding account is taken, designates this malad by the general appellation of 'an infectious distemper.' It was generall called the plague by the inhabitants. From tradition and other circum stances, particularly from the contemporaneous existence of yellow-fever n Philadelphia, there is reason to believe that this malady was the yellow fever; and, if so, was the first appearance of that disorder in Charles town, and took place in the nineteenth or twentieth year after it began t be built.†"

Dr. Frederick Dalcho has definitely fixed the date of this outbreak o yellow fever in Charlestown in the year 1699. Thus this historian says:

"The Rev. Mr. Marshall died in 1699, of a malignant disease which swep off many of the principal inhabitants of Charlestown. This disease wa probably the yellow fever which raged at the same time in Philadelphia In a letter from the Governor and Council to the Lord's Proprietors, date Charlestown, in South Carolina, January 17, 1699–1700, they state tha they had nothing to communicate, but that a most infectious, pestilentia and mortal distemper (the same which hath always been in one or more o His Majesty's American plantations for eight or nine years last past) which from Barbadoes or Providence was brought in among us int Charlestown about the twenty-eighth or twenty-ninth of August last past and the decay of trade and the mutations of your Lordship's public officers occasioned thereby. This distemper, from the time of its beginning afore said to the first day of November, killed in Charlestown at least 160 per sons, among whom were Mr. Ely, Receiver General; Mr. Amory, Receiver for the Public Treasury; Edward Rawlins, Marshal; Edmund Bohun, Chief Justice. Amongst a great many other good and capital merchants

*An Historical Account of the Protestant Episcopal Church in South Carolina from the first settlement of the Province to the War of the Revolution, etc.; by Frederick Dalcho, M. D., Assistant Minister of St Michael's Church; Charleston, p. 32.

†The History of South Carolina, from its first settlement in 1670 to the year 1808, in two volumes; by David Ramsay, M. D.; Charleston, 1809; vol. 2, p. 82.

housekeepers in Charlestown the Rev. Mr. Marshall, our minister, was
n away by the said distemper. Besides those that have died of this
emper in Charlestown, ten or eleven have died in the country, all which
the distemper and were infected in Charlestown, went home to their
ilies and died; and what is notable, not one of all their families was
cted by them. This afflictive dispensation of Providence is likewise
tioned in a letter from Isaac Norris, dated November 18, 1699, O. S.
ates that '150 persons had died in Charlestown in a few days; that
survivors fled into the country, and that the town was thinned to a
few people.'*

mall-pox appeared again in 1717, and returned in 1732, but in this latter
effectual care was taken to prevent its spreading.

the year 1738, small-pox was imported in a Guinea Ship, and spread
tensively that there was not a sufficency of persons in health to attend
sick; and many persons perished from neglect and want. There was
ely an hour in which there had not been one or more deaths.

om a manuscript in the hand-writing and found among the papers of
enerable Thomas Lamboll, who died in 1775, the following particulars
ollected relative to this disease.

first attracted public notice in May, 1738. In the next month a fast
was appointed by proclamation. Soon after the disease commenced, a
rt was circulated that tar water was not only a good preparation for
ering, but a preventive of the small-pox. Many barrels of tar were
and used for that purpose; but the author soon after took the infection
died, and his empirism died with him.

y an account dated September 30, of the same year, it appears that
hole number of deaths was 411; and the whole number who had taken
mall-pox was 2112, of which 833 were whites and 1279 blacks. Of
rmer, 647 took the disease in the natural way and of them 157 died.
whites who took the disease by inoculation, nine died. Of the 1279
s who took the disease 1028 had it in the natural way, and of them
ed, the remainder; 253, were inoculated, and of them seven died."

m these facts, as stated by Mr. Lamboll, it appears that of the white
ns who took the small-pox in the natural way, nearly one in every
ied; but of such as took it by inoculation, the deaths were only one
nty. Of the negroes who took the disease in the natural way, nearly
every seven died, but of such as took it by inoculation, the deaths
nly one in thirty six.

David Ramsay, writing in 1808, says, in reference to the preceding
hat, "It is well known that negroes have the small-pox as bad, if not
than white people when the treatment of both is the same. That
red better than their owners on this occasion must be referred to
eing under less restraint with regard to cold air. In treating the
ox, an excess of care and confinement is much worse than no care
inment whatever."†

the same manuscripts of Thomas Lamboll, it appears that on the
-first of September, an act of assembly was passed at Ashley ferry
inoculation for the small-pox in Charleston, or within two miles of
the tenth of October,§ 1738.

David Ramsay, gives the following account of the introduction of the
of inoculation into the province of South Carolina during the pre-
of small-pox in Charleston in 1738.

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torical Account of the Protestant Episcopal Church in South Carolina etc. by Frederick Dalcho,
35.

of South Carolina. p. 77.

of South Carolina. p. 77-78.

Dr. Moybray, a surgeon of a British man of war then in the harbor, pro posed inoculation; but the physicians opposed it at first. With the excep tion of Dr. Martin, they afterwards came into it. Mr. Philip Priolean wa the first person in Charleston who submitted to the operation. The suc cess which attended this first experiment encouraged several others to fo low the example. The disease soon after abated.

Small-pox appeared again in 1760.

Dr. Frederick Dalcho, records the facts, that; "the twelfth annual mee ing of the clergy was held April 16, 1760. Five clergymen were present an eleven were absent. The small-pox raging in town, prevented those wh were subject to its influence from attending the meeting. No sermon wa preached."

Dr. David Ramsay states, that "about the beginning of the year 1760, th small-pox was discovered in the house of a pilot on White Point; guard were placed round the house, and every precaution taken to prevent th spreading of the disease; but in vain. When the persons first infected White Point were either dead or well, the house in which they had lai was ordered to be cleaned. In doing this a great smoke was made whic being carried by an easterly wind, propagated the disease extensively the westward in the line of the smoke. Inoculation was resolved upon an became general.*

"When this practice was first introduced, and for several years after, th inoculators loaded their patients with mercury and tortured them with dee crucial incissions, in which extraneous substances impregnated with the v riolous matter was buried. There were then able physicians in Charleston but they were so mistaken with the proper method of treating the disea that it was no uncommon practice to nail blankets, over the shut windows of closed rooms, to exclude every particle of cool fresh air from their v riolous patients, whose comfort and safety depended on its free admissio The consequences were fatal. Charleston was a scene of the deepest affli tion. Almost every family was in distress for the loss of some of its mem bers, but so occupied with the attentions to the sick that they could neit er indulge the pomp nor the luxury of grief. The deaths from the sma pox was nearly eleven-twelfths of the whole mortality in Charleston. On eighty-seven died of other diseases, while the deaths from the small-p amounted to nine-hundred and forty. Of these only ninety-two died und inoculation.

Fifteen hundred persons are said to have been inoculated in one da and it is certain from the bills of mortality that 848 persons died of the d sease who were not inoculated. If we allow that only one in four died, in the year 1738, the whole number who took the disease in the natural w must have been 3392. Precision in numbers is not attainable; but enou is known and remembered by several persons still alive to prove that t year 1760 was one of the mort melancholy and distressing that ever to place in Charleston.

In the year 1763 the small-pox returned; but as there were few to ha it, and inoculation was generally adopted; its ravages were not extensi For seventeen years after, the small-pox was seldom or never heard During the siege of Charleston it was introduced, and immediately aft the surrender of the town, on the twelfth of May, 1780, a general inoculati took place. As the cool regimen was then universally adopted, the disea passed on without any considerable loss or inconvenience.

*An Historical account of the Protestant Episcopal Church p. 134.

"Since the Revolution, all the laws which interdicted the introduction d spreading of the small-pox have been repealed. There have been, of rse, some cases of small-pox almost every year, but nothing very gen- l or alarming in any one. A small proportion of those inoculated died suffered inconveniences from it; but to nineteen of twenty, it was a ling disorder. This was a great triumph of suffering humanity, but it s short of what followed. In the yeer 1802, vaccination was introduced Charleston within four years after Doctor Jenner had published efficacy in preventing the small-pox, though eighteen years had elapsed ween the first inoculation in England for the small-pox and the adoption hat practice in Carolina.

his substitute for small-pox (vaccination) was introduced into Charles- by Dr. David Ramsay, who after many trials succeeded in February, 2, in communicating the disease to his son Nathaniel. From him, inally or remotely, some thousands have received the disease. No case yet occurred in which a clearly marked case of small-pox has followed arly marked case of vaccination. Mistakes have been made with re- t to both diseases, and the one has in some instances been communi- d to persons who had previously used the seed of the other. From e causes, added to the ignorance and carelessness of some vaccinators, onfidence of a few in the Jennerian discovery has been weakened. But that the real vaccine is a preventive of the real small-pox is as cer- from the testimony and experience of thousands, as that the inocu- small-pox secures against the natural. Thus in the short space of nty years, the small-pox has been moderated in Carolina from the ral to the artificial. The latter so alleviated by mild treatment, and cularly by the cool regimen, as to become for the most part ifling disease; and finally an opportunity has been given oid the danger and inconvenience of both, by a safe and easy itute. The future ravages of the small-pox may be fairly put to the ac- of the carelessness, the ignorance, or the prejudices of the people. [The History of South Carolina from its first settlement, in 1670, to the 808; in two volumes. By David Ramsey, M. D.; Charleston, 1809; 8-81.]

ll-pox prevailed epidemically in Charleston during the seventeenth y, in 1698 and 1699; during the eighteenth century, in 1717, 1738, persons were attacked, of whom 411, or 20 per cent, died; of these re whites, 1669 of whom, or 20 per cent died; among the blacks, ases occurred, of which 145, or 12.5 per cent were fatal; in 1760 from small-pox 940, only 87 deaths being recorded from all other during that year, the deaths from small-pox bearing the frightful tion of 91.52 per cent to the deaths from all other causes; small-pox revailed epidemically in 1763 and 1780.

ng the nineteenth century after the introduction of vaccination no ex- epidemics are recorded, up to the time of the great American r, 1861–1865.

absence of small-pox from Charleston during the first sixty years of teenth century during which period vaccination was systematically lligently urged and practiced by its learned and accomplished phy- and surgeons, has been acknowledged by the medical profession and monstrated by official records.

ruth of the preceding proposition will be illustrated by the follow- istics:

Statement of the Deaths in Charleston, South Carolina, from all Causes and from Small-P for Thirty-six Years, from 1822 to 1848, Inclusive.

YEARS.	Population.	Deaths.			Proportion of Deaths to Population.		Deaths from Sm Pox.		
		Males.	F'males	Total.	One in.	In 100.	White.	Black.	
1822	24,780	537	388	925	26.78	3.72	0	0	
1823	26,301	432	382	814	32.21	3.10	0	0	
1824	27,822	656	403	1,059	26.27	3.80	0	1	
1825	28,233	481	359	840	33.60	2.97	18	34	
1826	28 644	420	344	764	37.48	2.66	15	14	
1827	29,055	474	329	803	36.68	2.67	0	0	
1828	29,466	454	339	793	37.15	2.69	0	0	
1829	29,877	388	374	762	39.20	2.55	0	0	
1830	30,289	408	355	763	39.68	2.50	0	16	
Mean		472	364	836	33.82	2.95	33	65	
1831	30,187	382	351	733	41.17	2 42	6	36	
1832	30,085	303	257	560	53.72	1.86	0	0	
1833	29,982	281	261	542	55 31	1.80	0	0	
1834	29,879	350	342	692	43.03	2.32	0	0	
1835	29,776	365	299	664	44.50	2.23	0	0	
1836	29,673	639	533	1,172	25 31	3.95	0	0	
1837	29,570	352	278	630	48.52	2.06	0	0	
1838	29,467	828	381	1,209	24.36	4.10	0	0	
1839	29,364	502	354	856	34.30	2.91	0	0	
1840	29,261	361	244	605	46.36	2.18	1	1	
Mean		433	330	766	38.80	2.57	7	37	
1841	28,910	336	258	594	50.35	1.98	0	1	
1842	28,559	307	243	550	51.83	1.92	0	0	
1843	28,208	368	329	697	40.47	2.47	4	46	
1844	27,857	282	271	533	50.37	1.98	0	0	
1845	27,596	272	298	570	48.40	2.06	0	0	
1846	27,155	326	281	607	44.72	2.23	0	0	
1847	26,803	272	276	548	48 89	2.04	0	0	
1848	26,451	322	292	614	43.05	2.32	1	0	
Mean		310	281	592	46.77	2.13	5	47	

Swine-Pox occasioned amongst the whites one death in 1824 and death in 1825; amongst the blacks, one death in 1827 and one death 1837; total deaths from Swine-Pox in Charleston, South Carolina, duri twenty-six years (1822 to 1848 inclusive), four.

During the same period vaccination caused one death amongst the whi in 1844, and one death amongst the blacks in 1842 and one death in 18 total deaths from vaccination in Charleston, South Carolina, during tw ty-six years (1822 to 1848 inclusive), three.

On the other hand Small-Pox caused deaths—whites 45, blacks 14 total, 194.

rom all the data which we have been able to obtain relative to the mor-
y of Charleston, South Carolina, subsequent to 1840, we extract the fo
wing concerning small-pox and vaccination.

YEARS.	Population.	Total Deaths.	Proportion of Deaths to Population.	Vaccination.	Deaths from Small-Pox.
4	29,963	553	54.13	2	0
184	29,963	570	52.18	0	0
184		607	47.71	0	0
184		543	54.74	0	0
184		617	43.11	0	0
184		798	36.34	0	0
185	No report.				
185		922	44.46	0	4
185		1,582	27.81	0	0
185	No report.				
185		1,876	23.49	0	59
185		1,088	45.94	0	0
185	No report.				
185		1,237	42.37	0	1
185		1,922	26.14	0	0
185		1,033	48.40	0	0
186		1,472	37.38	0	0
186		1,380	35.09	0	0
1862, 63, 1864	No reports.				
1865		2,068	9.70	0	138

Of the 138 deaths occasioned by small-pox in 1865, eleven were whites
and 37 colored. That small-pox continued to prevail is indicated from the
rept of the Health Officer for 1866.

We have in our possession the report of the Registrar of Charleston, South
Carolina, for only three months of 1876, April, May and June; during these
months the deaths from small-pox were, whites thirteen, colored eighty-three;
total ninety-six.

During the Federal occupation, after the fall of Charleston, near the close
of the Confederate struggle for independence, the colored people congregated
in the city, and small-pox introduced, by the Federal forces, prevailed to
a great extent, but the exact data is not in our posesssion to show the ac-
tual mortality occasioned by this disease:

Some conception of the condition of affairs in Charleston may be gather-
ed from the following extracts from the journals of 1867.

SANITARY STATISTICS OF SOUTH CAROLINA.

Through the kindness of the Medical Director of the Freedmen's Bureau for South
Carolina, Brevet Colonel and Surgeon M. K. Hogan, we have been permitted to examine
the Sanitary Reports of Refugees and Freedmen, who have been receiving medical treat-
ment from the officers of the Bureau. We procured these statistics in order to examine,
from the most reliable data within reach, into the general condition of health prevailing
throughout the State, as well as in this city. We did this because there has been within
the last few weeks what we believed to be exaggerated rumors regarding the amount of
sickness and mortality in the State. As we have before stated, "refugees" here means
colored whites. These reports include the Health Department of the City of Charleston.
The following posts are represented; Charleston, Beaufort, Port Royal Island, James'
Island, Wadmalaw, Georgetown, Hamburg, St. James' Santee, Edisto Island, Mount
Pleasant, Summerville, Columbia, Hopkins' Turnout, Hilton Head, St. Paul's Parish,
Orangeburg, Aiken, St. Thomas' Parish, Monk's Corner, and Darlington. Some of these posts
have recently been discontinued. The reports of the "Refugees," we believe, are princi-
pally confined to the white poor of this city, and the freedmen, for the most part, are of
Charleston and the sea islands.

The reports before us would be of great interest and scientific value if there were any
possibility of determining what proportion the number of sick here reported bears to
the whole population, from among whom these sick are taken. But this from the nature
of the case, it is impossible to ascertain. The numbers purporting to give this informa-
tion, therefore, are necessarily only of proximate accuracy. We have thought, how-
ever, that a comparison of the sanitary condition of the present summer, with that of
last year, and of the white with the colored population, may not be without interest to
the profession, or even to the public.

The consolidated reports of the several posts in South Carolina, under the charge of the Freedmen's Bureau (including the poor white and black of Charleston), present us with the following statistics:

REFUGEES.

	1866.			1867.		
	May.	June.	July.	May.	June.	July.
Total under charge of Bureau	2,825	2,825	2,925	4'184	4,439	4,437
Total number treated during month	585	546	601	889	626	98?
Died during the month	12	17	8	13	7	8
Small-pox and Varioloid	26	9	1	.....	.....	.....
Deaths from same	.....	1	.....	.....	.....	.....
Typhoid fever	2	3	5	1	3	2
Deaths from same	.....	2	.....	.....	.....	.....
Malarial fevers	81	112	169	152	173	300
Deaths from same	.....	3	.....	.....	.....	2
Consumption	6	9	13	12	7	5
Deaths from same	2	.....	1	2	2	.....
Scrofula	1	1	6	1	2	4
Deaths from same	.....	.....	.....	.....	.....	.....

FREEDMEN.

	1866.			1867.		
	May.	June.	July.	May.	June.	July.
Total number under charge of Bureau	39,099	3,9096	33,285	116,135	116,135	116,974
Total number treated during month	5,356	5,536	4,522	5,716	5,641	7,883
Died during the month	87	67	63	70	66	113
Small-pox and Varioloid	176	271	226	.....	.....	.....
Deaths from same	20	15	10	.....	.....	21
Typhoid fever	41	69	89	10	9	6
Deaths from same	6	5	3	2	3	3,390
Malarial fever	603	1,190	1,840	686	1,228	23
Deaths from same	5	8	5	2	7	33
Consumption	27	28	33	31	37	8
Deaths from same	5	3	4	14	7	63
Scrofula	40	35	32	53	64	2
Deaths from same	.....	1	.....	1	.....	.....

Upon an examination of the foregoing tables it will be seen that the amount of sickness this year has been greater, both among black and white, in May, June and July, than during the corresponding months of last year; and this difference, we have every reason to believe, is due to the greater preponderance this year of the different forms of malaria fever.

Small-pox, it is known, was epidemic here during the winter months of 1866—'67, and the period embraced in the above reports bring us to the close of the epidemic cycle. The disease was very fatal, but during the summer months, as usual, its virulence abated, and we hence find that but few whites died from it. The number of deaths among the freedmen was greater—11 per cent. in May; 6 per cent. in June, and about 4 in July; while among the whites, during the three months, the deaths form only 3 per cent. of the cases. There is now not a single case of small-pox in the State of South Carolina that we know of, nor has there been for months.

Typhoid fever did not prevail to any alarming degree either last year or this. We have only sixteen cases reported among whites, two of which, or twelve and one-half per cent. died. Among the freedmen, we note 179 cases last year, with fourteen deaths, and only forty cases, with eleven deaths, this year. The percentage of mortality last year from this disease was about eight per cent., and this year twenty-seven per cent. of the cases resulted fatally, a very large mortality, if the statistics may be relied upon.

The numbers of cases of the different forms of malarial fevers reported are not greatly in excess this year over last. It is true the aggregate of cases is much larger, but it should be observed that, both among white and black, the number of those enjoying the benefit of medical care from the Bureau is larger this year than it was last. The percentage of malarious diseases this year and last, calculated from the whole number of cases treated, is as follows:

FREEDMEN.			REFUGEES.		
	1866.	1867.		1866.	1867.
May	.10	.12	May	.14	.15
June	.21	.21	June	.20	.27
July	.33	.43	July	.28	.30

We find here, with all the uncertainty and accidents to which statistics are subject, a strong coincidence, in the similarity of the proportion these malarious diseases hold to the entire number of diseases reported, in the two years under consideration.

Consumption and scrofula, we believe, are not common diseases in this climate. During the three months under consideration, in 1866 and 1867, we have 52 cases of consumption reported among whites, with 7 deaths, or 13 per cent. Among the freedmen, during the same period, we have 189 cases and 41 deaths or 12 per cent. The percentage of cases of consumption among whites, calculated on the number of persons under the charge of the Bureau, was .014, or nearly one and a half per cent., and among the freedmen .002, only one-th of one per cent., a very small fraction. Of scrofula only 15 cases are reported among whites, and 287 among the freedmen.

On the whole, as far as we are able to judge from these reports, we should say that the sanitary condition of South Carolina is good—much better than is supposed by those who have not examined the subject.

Perhaps, in conclusion, it may be well to state that there has not been this year a single case reported of any epidemic disease within the limits of this State. There has been small-pox, not a single case of yellow-fever, cholera, or even breakbone-fever, reported this year; and considering the lateness of the season, we think our people may enjoy reasonable hope of immunity from epidemic during the remainder of the year.

The following statistics of deaths by small-pox, in Charleston, South Carolina, during the fifteen years immediately following the American Civil War, have been furnished by the Registrar.*

Deaths from Small-Pox in Charleston, South Carolina, during the Fifteen Years 1865 *to* 1879

	1865	1866	1867	1868	1869	1870	1871	1872	1873	1874	1875	1876	1877	1878	1879	Total Whites.	Total Colored.	Total White and Colored.
White	11	37	....	0	0	0	0	1	8	3	0	0	0	0	0	60		
Colored	27	239	4	0	0	0	0	6	98	32	0	6	0	0	0		512	
Total	38	276	4	0	0	0	0	7	106	35	0	6	0	0	0	60	512	572

The marked increase of small-pox amongst the colored people after the civil war was referable to the sudden liberation from slavery, and the consequent freedom of action, as well as to the neglect of vaccination.

From the preceding facts, it is evident that Charleston, South Carolina, was protected from the ravages of small-pox by the introduction of vaccination in 1802 by Dr. David Ramsey, and that the immunity of this city from this loathsome pestilence during the first sixty-four years of the nineteenth century must be attributed to the earnest and philanthropic labors of her accomplished physicians and surgeons in the earnest advocacy and skillful practice of vaccination.

SMALL-POX AND VACCINATION IN GEORGIA.

The early medical history of Georgia, during the eighteenth century, embracing a period of almost sixty-seven years, has never been written; but we are convinced after careful research that this province and State has ever enjoyed the benefits of the professional skill and labors of educated, accomplished and philanthropic medical men. During the nineteenth century, no State of equal white population in the American Union can produce a more distinguished array of learned and skillful surgeons and physicians, amongst whom may be named Drs. Waring, Richardson, Kollock, Bullock, Arnold, West and Harris, of Savannah; Dr. Harden, of Liberty county; Dr. Anthony, Dr. Paul F. Eve, L. A. Dugas, Lewis D. Foard, Joseph Eve, and Henry F. Campbell, of Augusta, Georgia; and Dr. Long, the discoverer of the Anæsthetic effect of Sulphuric Ether, of Athens, Georgia.

The first authentic notice of the presence of small-pox in Georgia which has been recorded (although the disease was undoubtedly present at other times), was in the year 1779.

The failure of the allied arms to capture Savannah, and the mutual defeat and withdrawal of the French and American troops, left Georgia in a worse condition than ever; and it seemed almost as if her political existence was at an end.

The royal government was re-established and Sir James Wright issued his proclamation, dated Savannah, the twentieth of October, 1779.

The first care of Sir James Wright was to put Savannah into a proper condition; for it had been so shattered by the destructive fire of the French and Americans, and by the wanton use of the troops, as well as by the necessary demands of the siege, that it was in a deplorable state. The churches and public buildings had been used for depots, and hospitals and barracks; private dwellings had been converted into mess-halls and officers' quarters; fire had laid waste some squares of buildings; others had been pulled down, to use the materials in different parts of the fortifications; others had been rendered tenantless by the battering balls; and there was scarcely a house in town which had not been made to suffer, outside or in, in consequence of crowding together so many of the inhabitants, with soldiers, seamen, and negroes, within the narrow limits of the entrenchments.

Scarcely had the town put on the aspect of order and cleanliness, before the SMALL-POX, broke out and produced great consternation amongst the inhabitants and soldiers. Inoculation was at that time but little practiced, and only then after an order obtained for that purpose from the Governor's Council, who generally refused to grant the order, except the disease had already broken out in the houshold desiring this preventive treatment.

The exact date at which vaccination was introduced into Georgia is not known, but it was probably about the same time (1802) that it was practiced by Dr. David Ramsey in Charleston, South Carolina.

Many of the older citizens, who were known to me in my boyhood had been inoculated for the small-pox before the introduction of Dr. Jenner's method.

The following records of the mortality occasioned by small-pox, in Savannah and Augusta, Georgia, which I have consolidated from the original records, will show that the small-pox was almost wholly absent from the two largest and most important cities of Georgia, during the first sixty years of the nineteenth century; and that its appearance and prevalence was referable to the assemblage of large bodies of troops during the American civil war, and the liberation of the negro slaves:

eaths from all Causes and from Small-pox amongst the White Population of Savannah, Ga., during a period of fifty years, 1804-1853, inclusive.

Year.	Deaths from All Causes.	Deaths from Small-Pox.	Year.	Deaths from All Causes.	Deaths from Small-Pox.	Year.	Deaths from All Causes.	Deaths from Small-Pox.
4.....	207	1	1824 ...	136	0	1844.....	247	0
5.....	238	0	1825	126	0	1845.....	229	0
6.....	159	0	1826.....	235	0	1846	240	0
7	230	0	1827.....	221	0	1847.....	210	0
8 ...	219	0	1828.....	146	0	1848.....	298	0
9.....	183	0	1829	209	0	1849	357	0
0.....	163	0	1830.....	159	0	1850	384	0
1	312	0	1831	149	0	1851.....	414	0
2	226	0	1832.....	216	0	1852	642	0
3....	214	0	1833.....	202	0	1853.....	470	0
4... ..	300	0	1834.....	197	1			
5.....	233	0	1835.....	228	1	Total 10 years, 1844-1853..		0
6.....	272	0	1836.....	249	0	Total 20 years, 1824-1843..		2
7.....	461	2	1837.....	358	0	Total 20 years, 1804-1823..		3
8.....	211	0	1838.....	331	0			
9.....	510	0	1839	367	0	Total deaths from Small-pox in Savannah, Ga., during fifty years, 1804-1853.....		5
0.....	817	0	1840 .	380	0			
.....	384	0	1841.....	305	0			
2	291	0	1842	272	0			
.....	288	0	1843	256	0			
tal 20 ears..		3			2			

During a period of fifty years, 1804–1843, inclusive, in Savannah, Ga., e total deaths from all causes numbered 14,322, and of this number small-x occasioned five. The white population in 1804 was 2799, in 1808, 3010; 10, 5888; 1843, 7250; 1850, 8395.

ul Deaths from All Causes, and from Small-Pox, in the White and Colored Population of Savannah, Georgia, during a Period of Sixteen (16) *Years, 1854 to 1869, inclusive.*

YEARS.	WHITES.		BLACKS AND COLORED.		WHITES, BLACKS AND COLORED.	
	Total Deaths from All Causes.	Total Deaths from Small-Pox.	Total Deaths from All Causes.	Total Deaths from Small-Pox.	Total Deaths from All Causes.	Total Deaths from Small-Pox.
1	1,221	0	308	0	1,529	0
1	433	0	292	0	725	0
1	466	0	297	0	765	0
1	376	0	264	0	640	0
1	592	0	262	0	854	0
1	430	0	273	0	703	0
1	474	0	282	0	756	0
1	563	0	269	0	832	0
1	555	0	372	0	927	0
1	459	0	389	0	848	0
1	747	4	446	0	1,193	4
1	1,202	13	819	1	2,021	14
1	530	9	912	8	1,442	17
1	476	0	594	1	1,070	1
1	498	1	581	0	1,079	1
1	423	0	429	0	852	0
Total deaths from small-pox during sixteen years in Savannah, from 1854 to 1869.....		27		10		37

tal deaths from all causes, whites and colored, 1854 to 1869, 16,234.

careful examination of the mortuary records of Savannah shows that it difficult to determine the exact number of deaths from yellow fever, ing many of the years embraced in the preceding table, containing the hs amongst the whites from all causes, and the deaths from small-pox, ng a period of sixty-six years, and amongst the blacks and colored ng a period of sixteen years.

1804—One death is recorded as due to yellow fever in the month of October, whilst inflammatory and putrid fevers caused ten deaths, and remittent fever sixty-five, intermittent one; total seventy-seven; natives fourteen, foreigners sixty-three.

1805—No classification of fevers; 110 deaths being recorded simply as fever, two deaths nervous fever; total 112; natives twenty-two, foreigners seventy-eight.

1806—Remitting fever forty-one, fever and ague eleven, total fifty-two; natives nine, foreigners forty-three.

1807—Fever seventy-two, intermittent five, nervous three; total eighty; natives nine, foreigners seventy-one.

1808—Fever remittent seventy, intermittent seven; total seventy-seven; natives eight, foreigners sixty-nine.

1809—Fever remittent sixty, intermittent one, malignant one, nervous one; total sixty-three; natives nine, foreigners fifty-two, unknown two.

1810—Fever remittent forty-four; inflammatory one; intermittent one; natives eight, foreigners thirty-eight.

1811—Remittent seventy four, bilious malignant four, intermittent two, inflammatory one, putrid one, typhus five; total eighty-seven; natives thirteen, foreigners seventy-three, unknown one.

1812—Fever ninety-three, bilious fourteen, inflammatory six, endemical one, putrid two, nervous one, malignant fever one, black vomit two; total 120; natives twenty-four, foreigners ninety-two, unknown four.

We observe that two cases are recorded as black vomit; and also that fever caused a mortality of 102 in a city of only about 5,300 inhabitants.

The distribution of these deaths by months are as follows, May two, June four, July ten, August eleven, September twenty-nine, October fifty, November five, December five; the rise and decline of the mortality from fevers in 1812 resembled the ordinary progress of yellow fever.

1813—Fever fifty-five, bilious two, intermittent three, inflammatory three, nervous one; total sixty-four; natives nineteen, foreigners forty-five.

1814—Fever 125, bilious putrid four, inflammatory one, typhus one, spotted one, intermittent two; total 166; natives twenty-three, foreigners 138, unknown five.

In this year again the course of mortality from fever resembled that of yellow fever, being January one, March one, May one, June eight, July fifteen, August twenty-five, September fifty-five, October forty-six, November fourteen.

1815—Fever 129, inflammatory two, nervous two; total 130; natives eighteen, foreigners 104, unknown eight.

1816—Fever 134, bilious three, putrid one, intermittent six, typhus one, yellow one; total 146; natives thirty-eight, foreigners ninety-one.

1817—Fever 304, bilious four, inflammatory one, yellow two, typhus two; total 311; natives fifty-seven, foreigners 236, unknown twenty.

Amongst this large number of deaths from fever, only two were indicated as yellow; the deaths by months from fever, were as follows: January four, February five, March two, June eight, July forty-five, August thirty-seven, September forty-six, October 104, November forty-seven, December thirteen.

1818—Fever seventy-four, nervous two; total seventy-six; natives thirteen, foreigners sixty, unknown three.

1819—Fever 322, black vomit one; total 323; natives thirty-three, foreigners 285, unknown five. The monthly mortality from fever was as follows:

rch one, April three, June four, July twenty-four, August twenty-ht, September, sixty-six, October 147, November forty, December nine, al 323.

The first acknowledged and undoubted epidemic of yellow fever in vannah, Georgia, during the first twenty years of the nineteenth century urred in 1820.

820—Fever 626, yellow fever two, black vomit ten, intermittent one; tal deaths from fever 649; natives 116, foreigners 502, unknown thirty-0. The deaths from fever were distributed as follows: January four, Feb-ry four, March one, May three, June fourteen, July thirty-nine, August , September 214, October 197, November fifty-three, December ten.

t is remarkable that upon the mortality record, only two cases were orded as due to yellow fever.

he following table presents the total deaths from fever and other causes Savannah, Georgia, during a period of fifty years, 1804-1853, inclusive, ngst the white inhabitants:

YEARS.	Total Deaths from Fevers.	Total Deaths from All Other Causes.	YEARS.	Total Deaths from Fevers.	Total Deaths from All Other Causes.
18	77	130	1829	32	177
18	112	126	1830	28	139
18	52	107	1831	17	139
18	80	150	1832	57	159
18	77	142	1833	36	166
18	63	120	1834	34	163
18	46	117	1835	57	171
18	87	125	1836	38	211
18	120	106	1837	100	258
18	64	150	1838	108	163
18	166	134	1839	154	213
18	130	103	1840	124	256
18	146	126	1841	83	222
18	313	148	1842	62	210
18	76	135	1843	91	165
18	323	187	1844	51	196
18	649	168	1845	57	172
18	183	202	1846	60	180
18	133	158	1847	28	182
18	109	159	1848	50	148
18	42	94	1849	71	286
18	23	103	1850	63	321
18	62	173	1851	75	339
18	96	225	1852	202	440
18	23	123	1853	76	394
tal fifty years				4,888	9,444

tal deaths from all causes, 14,332.

Ta —*Deaths from Malarial Fever and from Yellow Fever in Savannah, Georgia, During a Period of Sixteen Years*, 1854–1869; *Whites.*

AR.	DEATHS.		YEAR.	DEATHS.		YEAR.	DEATHS.	
	Malarial Fever.	Yellow Fever.		Malarial Fever.	Yellow Fever.		Malarial Fever.	Yellow Fever.
	115	625	1860	59	0	1866	48	5
	60	0	1861	80	4	1867	67	0
	86	0	1862	53	0	1868	52	1
	55	0	1863	35	0	1869	36	1
	76	112	1864	97	14			
	49	0	1865	103	1	Total	1,071	763

Table—Deaths from Malarial Fever and from Yellow Fever in Savannah, Georgia, During Sixteen Years, 1854–1869; Blacks and Colored.

YEAR.	DEATHS.		YEAR.	DEATHS.		YEAR.	DEATHS.	
	Malarial Fever.	Yellow Fever.		Malarial Fever.	Yellow Fever.		Malarial Fever.	Yellow Fever.
1854	23	14	1860	8	0	1866	50	0
1855	9	0	1861	3	0	1867	43	0
1856	40	0	1862	14	0	1868	34	0
1857	5	0	1863	19	0	1869	22	0
1858	7	2	1864	20	2			
1859	9	0	1865	120	0	Total	396	18

The total deaths amongst the whites during the period specified (1856-1869) were 9,445; amongst the blacks and colored, 6,789; grand total whites and blacks, 16,234.

In 1827 sixteen deaths from yellow-fever were recorded, and seventeen deaths from malignant fever; total from yellow and malignant fever, 33. The deaths from these causes were distributed as follows: September, ten; October, nineteen; November, four. Fever was credited with fifty deaths—intermittent, six; nervous, four; typhus, three; total, ninety-six; natives, sixteen; foreigners, seventy-eight; unknown, two.

In 1839, when the yellow-fever prevailed in a fatal form in Augusta, Georgia, yellow-fever does not appear amongst the list of fatal fevers. The deaths from fevers were classified as follows: Fever, 139; intermittent, three; malignant, eleven; nervous, one; total deaths from fevers, 154; natives, fifteen; foreigners, 137; unknown, two.

It is probable that a portion of the deaths (154) recorded as fever and malignant fever, etc., were yellow-fever.

In 1876, during the months of August, September, October and November, yellow-fever caused 896 deaths, and other diseases 455; total, 1,351. The following is the official record as prepared by Dr. William Duncan, and embodied in the annual report of Hon. Edward C. Anderson, Mayor of the city of Savannah for the year 1877.

Deaths from Yellow Fever and other diseases in Savannah, Georgia, during the months of August, September, October and November.

1876.	WHITES.			COLORED.			TOTAL.
Months.	Yellow Fever.	Other Diseases.	Total.	Yellow Fever.	Other Diseases.	Total.	Whites and Colored.
August	35	25	59	2	19	21	80
September	483	66	549	66	137	201	752
October	212	54	266	52	109	161	427
November	41	16	57	5	30	35	92
Total	771	160	981	125	295	420	1,351

Total yellow fever, 896; other diseases, 455; grand total, 1351.

If the deaths from fevers occurring in the months of June, July, August, September, October and November and December in 1820, be regarded as yellow fever (an estimate above rather than below the true number of deaths occasioned by this disease), then we have 637, as the yellow fever mortality of that year; and if we add the deaths from yellow fever in 1854, 639; 1858, 114, and 1876, 896, the total deaths from yellow fever in Savannah, Georgia, during a period of seventy-three years, 1804-1876, would number:

0	637	1858	114
1	639	1876	896
Total	1,276	Grand total	2,286

Before the introduction of vaccination a large proportion of the deaths is caused by small-pox, and yet the official mortuary records of the city Savannah show that, during a period of sixty-six years, 1804 to 1869, deaths from small-pox reached only forty-two out of a total of deaths m all causes: Whites, 1804 to 1853, 14,332; whites and colored, 1854 to 69, 16,234; total, 30,566.

Whilst the various forms of fevers destroyed amongst the whites during y years, 1804 to 1853, 4,888; whites and blacks, sixteen years, 1854 to 69, 2,626; total, 7,514.

The statistics of Savannah show that the colored race are far less liable the various forms of miasmatic fevers and yellow-fever. This immunity es not extend to small-pox, which, on the other hand, proves very de- uctive to the colored race.

We must attribute the remarkable immunity of the white and black es of Savannah, Georgia, during the nineteenth century, from the rav- s of small-pox to the faithful performance of vaccination and revaccin- on by the medical profession; and the results of their labors in this pect have been placed in bold relief by the record of the preceding mor- ry statistics, illustrating the ravages committed by yellow-fever and larial fever, during the period taken under consideration.

SMALL-POX AND VACCINATION IN AUGUSTA, GEORGIA.

ths from All Causes and from Small-Pox, Whites and Blacks, in Augusta, Georgia, during Forty-eight Years, 1818 *to* 1866.

YEARS.	Total Deaths from All Causes.	Deaths from Small-Pox.	YEARS.	Total Deaths from All Causes.	Deaths from Small-Pox.
18	90	0	1842	71	0
18	118	0	1843	80	0
18	126	0	1844	105	0
18	127	0	1845	139	0
18	145	0	1846	185	0
18	109	0	1847	168	0
18	90	0	1848	236	0
18	127	0	1849	243	0
18	117	0	1850	328	1
18	134	0	1851	363	7
18	91	0	1852	410	0
18	94	0	1853	372	0
18	71	0	1854	538	1
18	152	0	1855	364	0
18	104	0	1856	367	0
18	129	0	1857	421	0
18	75	0	1858	333	0
18	105	0	1859	349	0
18	107	0	1860	395	0
18	150	0	1861	432	0
18	95	0	1862	638	0
18	340	0	1863	687	5
18	93	0	1864	827	0
18	55	0	1865	1,490	82

t 1865 the deaths from small-pox amongst the whites was eight, and ngst the colored people seventy-four.

he disease continued to prevail in August, during 1866; we have the rd for only the first six months of this year (1866, January, February, ch, April, May and June), and during this period the deaths numbered, tes, 37; blacks, 260; total, 297.

The negroes, suddenly set free by the results of the civil war, flocked into the cities to receive Federal aid; and in their destitute, filthy and crowded condition, fell easy victims to small-pox.

During a period of forty-six years, 1817-1864, inclusive, the deaths from small-pox in Augusta, Georgia, numbered only fourteen, notwithstanding that the disease was introduced in 1850-1851, 1854 and 1863. Its suppression must be referred to the untiring efforts of the skillful physicians, in protecting the people by vaccination.

During the year 1865 and the first six months of 1866, forty-five white and 334 colored people perished by the disease; total, 379.

Since its foundation up to the present date, January, 1884, Augusta has suffered with two epidemics of yellow fever; namely, in 1839 and 1854.

The mortuary records show the following mortality occasioned by yellow fever in Augusta, Georgia:

Deaths by Yellow Fever in Augusta, Ga., 1839.

MONTHS.	Deaths.
July	1
August	27
September	148
October	52
November	16
December	1
Total	245

Deaths by Yellow Fever in Augusta, Ga., 1854

MONTHS.	Whites.	Colored.	Total.
September	45	4	49
October	52	7	59
November	12	2	14
December	0	0	0
Total	109	13	122

Total deaths from yellow fever in 1839 and 1854, 367.

The small-pox of 1865-1866 (first six months), destroyed 379 lives, or twelve more than the mortality of the yellow fever epidemics of 1839 and 1854, which struck terror into the hearts of the people.

Yellow fever strikes down the most prominent and useful citizens, and concentrates its ravages upon the white race; small-pox since the introduction of vaccination confines its attacks almost exclusively to the unvaccinated, and to the poor and filthy in crowded houses. Hence the former disease excites more terror and alarm than the latter.

INTRODUCTION OF VACCINATION INTO THE POSSESSIONS OF SPAIN IN NORTH AND SOUTH AMERICA.

Father Torribio says, that the small-pox, introduced by a negro slave of Navarez attached to the Spanish forces, in 1520, carried off half the inhabitants of Mexico. Torquemada states, that the Matlazahuatl carried off 800,000 Indians in 1545, and 2,000,000 in 1576; but Alexander Humboldt, justly observes that these numbers must be in a great measure conjectural. He also remarks, that there is an interesting problem to be solved. Was the plague, which is said to have ravaged the Atlantic regions of the United States, prior to the arrival of the Europeans, and which Dr. Rush and his followers consider as the origin of the yellow fever, the same with the Matlazahuatl of the Mexicans?

According to Humboldt,* small-pox, introduced into Mexico in 1520, commits its ravages only every seventeen or eighteen years. In equinoctial countries, like the black vomit and several other diseases, it seems to have regular periods of recurrence; for, although frequently introduced by shipping from Europe, it does not become epidemic but at well-marked inter-

*Voyage d'Alexandre de Humboldt, et Aime Bonpland. Esai Statisque sur la Nouvelle Espagne, 4 to. Paris, 1808.

ls. It committed terrible ravages in 1763, and especially in 1779. In t year it carried off more than 9,000 in the City of Mexico alone. The idemic of 1797 was less fatal, chiefly on account of the attention and zeal h which *inoculation* was propagated. In the city of Valladolid, the ital of Mechoacan, of 6,800 *inoculated*, only 170 died, and many of these l probably been previously infected. In the whole kingdom 60,000 were *culated.**

Vaccination was unknown at Lima, Peru, till the month of November, 2. At that period the small-pox prevailed on the coast of the South Sea. nerchant vessel, *Santo Domingo de la Calzada*, put into Lima, on the pas- e from Spain to Manilla. An individual had had the good sense to send this vessel vaccine matter to the Philipine Islands. They availed them- es of this opportunity at Lima; and M. Unanue,† professor of anatomy author of a work on the climate and diseases of Peru, vaccinated several ividuals by matter brought by the merchant vessel.

o pustule appeared, and the virus appeared either altered or too weak. vever, M. Unanue having observed that all the vaccinated individuals h a very mild small-pox, employed this variolous matter to render, if sible, by the ordinary inoculation the disease less fatal. He thus per- ed in an indirect way the effects of a vaccination supposed to have d.

is also stated by M. Humboldt that in 1802 it was discovered that the c pox was known to the peasantry in the Peruvian Andes. A negro slave in e family of the Marquis Valleumbroso was inoculated with small-pox, b ineffectually. They were going to repeat the inoculation, when the y g man declared that he was very certain he would never take the s l-pox, because in milking the cows of the Cordilleras of the Andes he h had a sort of cutaneous eruption, caused, as the old Indian herdsmen s by certain tubercles which are sometimes found on the teats of the c "Those who have had this eruption," said the negro, "never take th small-pox." The Africans, and especially the Indians, evince great s city in observing the characters, manners and diseases of their domes- ti imals. It is not, therefore, astonishing that after the introduction of d sed cattle into America, the common people should have remarked th he pustules upon the cow's teats should communicate a sort of mild s -pox, and that those who had it should escape the general contagion d g epidemics.

I he month of January, 1804, the vaccine inoculation was introduced a xico through the activity of Don Thomas Murphy, who brought the vi from North America. This introduction found few obstacles; the co ox appeared under the aspect of a very mild malady; and the small- po noculation had already accustomed the Indians to the idea that it m be useful to submit to a temporary evil for the sake of evading a gre r evil.

A xander Humboldt affirms, that if the vaccine inoculation, or even the o ry inoculation, had been known in the New World in the sixteenth c y, several millions of Indians would not have perished victims to the s ox, and particularly to the absurd treatment by which the disease w ndered so fatal.

T is disease the fearful diminution of the number of Indians in Cali- or is to be ascribed.

* n in the hundred died of individuals of all ages, who, without being inoculated, were victims of l small pox.

† siones sobre el clima de Lima, y sus influencias en los seres organizados en especial, el hombre. tor Don Hipolito Unanue, Catedratico de Prima de Medecina, en la Real Universidad de San irector del Colegio de Medecina y Cirurgia de San Fernando, Medico Honorario de Camara de S. de la Real Academia Medico Matritense. Proto Medico del Peru, secunda edicion, Madrid, 1815.

The ships of war commissioned to carry the vaccine matter into Americ and Asia arrived at Vera Cruz shortly after the arrival of Alexander Hum boldt.

Don Antonio Valmis, Physician General of this expedition, visite Porto Rico, Cuba, Mexico and the Philippine Islands; and his stay Mexico, where, nevertheless, the cow-pox was known before his arriva contributed singularly to facilitate the propagation of this notable preve ive of the small-pox. In the principal cities of the kingdom, Vacci Committies were formed, who by vaccinating monthly, preserved the viru from being lost.

M. Valmis discovered cow-pox in the environs of Valladolid, and in th village of Atlisco, near Puebla, in the udder of the Mexican cows.

This fact renders the story of the presence of cow-pox in the Peruvia Andes less improbable, for the Hindostan relation of a similar kind was mere fabrication to impose a belief of their great sagacity.

The persons attached to the expedition of Dr. Francis X. de Valmis, hono ary surgeon of the Royal Chamber, were several physicians, with assistant and twenty-two children, who had not had the small-pox, and were destine to preserve the valuable fluid by a successive vaccination from arm to arm or one after another in the course of the voyage. They sailed from the por of Corunna, under the direction of Dr. Valmis on the twentieth of Novembe 1803. They first touched at the Canaries, then at Porto Rico, and fro thence proceeded to Carracas. On leaving the port of Laguaira in that pr vince, they separated into two parties, the one sailing for South Americ under the care of the sub-director, Dr. Francis Salvani; the other unde Dr. Valmis for the Havannahs, and from thence to Yucatan. In this pr vince they again made a division. Dr. Francis Pastor proceeded from th port of Sisal to that of Villahexmosa in the province of Tabasco, to propa gate vaccination in the royal city of Chiapa, and as far as Guatemala, pa sing through a tedious and rough country for 400 leagues to Oaxaca whilst the other party arriving safely, at Vera Cruz, not only passed throug the whole viceroyship of New Spain but the interior provinces, fro whence they were to return to Mexico, which was the point of reunio Having profusely disseminated this preventive from the natural smal pox, through the northern parts of Spanish America, to the coasts Sonora and Sinaloa; and having established in each capital a central *socie* composed *of the highest* authorities and most zealous medical characters, t presreve it as a sacred deposit, for which they were answerable to th King of Spain and posterity, the *Director* determined that this part of th expedition, which had been crowned with success, should carry to Asia th vaccine virus, and having overcome some difficulties, Dr. Valmis embarke at Acapulco for the Philippine Islands.

Dr. Valmis accomplished this passage in little more than two month taking with him from New Spain twenty-six children to be successivel vaccinated; and, as many of them were very small, they were placed un der the charge of a matron from the orphan house of Corunna; and in thi as in former voyages, the greatest attention was paid to their cleanlines and comfort. The expedition having arrived at the Philippine Islands propagated the variolæ vaccinæ through the islands subject to his Spanis Majesty.

Dr. Valmis, having thus closed his philanthropic mission, resolved, wit the consent of the Captain-General, to extend the beneficience of his Kin and the glory of his august name to the utmost confines of Asia.

n consequence vaccination was introduced through the vast Archipelago
he Visayas Islands. When Valmis arrived at Macao and Canton, he
ceeded in introducing fresh and active vaccine matter into the Chinese
pire, by the means already pointed out.

fter having extended vaccination in Canton as much as possible, under
political regulations of that empire, and leaving its propagation to the
glish factory in that place, Valmis returned to Macao, and embarked for
on, where he arrived on the fifteenth of August, 1806.

hat part of the expedition which was destined for Peru, under the di-
ion of Salvani, was wrecked in one of the mouths of the River Made-
e; but being quickly succored by the natives, the magistrates of the
hborhood and the government of Carthagena, they saved the sub-
ctor, three physicians who accompanied him, and the children, with the
l in a proper state, which they successfully spread in that port and
rince. From thence they transmitted it to the Isthmus of Panama, and
ertaking the troublesome navigation of the River Madelaine, they
ed the time necessary on its respective banks; they penetrated repeat-
into the country to fulfill their commission in the towns of Teneriffe,
etc., etc., in the valley of Cucuta, and in the city of Pampelona and other
lous places, until they rejoined each other at St. Fee. They gave full
mation to the medical men wherever they went, and laid down regula-
agreeably to the instructions of the director, in order to preserve the
ine virus, which, from the account of the Viceroy, they communicated
,000 persons without one unpleasant accident.

wards the end of March, 1805, they prepared to continue their journey,
g different and separate routes, to pass with more expedition and
ty through the other towns of the Viceroyship, situated on the road
payan, Cuenca and Quito, and so on to Lima; and in the following
ust they arrived at Guayaquil. This expedition not only succeeded in
gating vaccination throughout countries adverse as well as friendly,
n the dominions of the King of Spain, they assured the perpetuity of
essing by the establishment of the central societies, and also by the
very of Dr. Valmis of the existence of the cow-pox in the Valley of
co, near the city of Puebla of the Angels, and in the neighborhood of
ty of Valladolid de Meehoacan, where it was discovered by the Assist-
Dr. Antonio de Gutierrez, and in the district of Calabozo in the prov-
f Carracas, where it was found by Dr. Carlos de Pozo, a physician
ished there.*

voyage of M. Valmis, will thus remain forever memorable in the an-
f history.

Indies saw for the first time three vessels, which were formerly
ed only with the instruments of carnage and destruction, bearing
the germs of relief and consolation to distressed and suffering hu-
.

arrival of the armed frigates in which M. Valmis made the circuit of
lantic and Pacific Oceans, gave rise on several coasts to one of the
mple and affecting ceremonies. The bishops, military governors, and
s of greatest distinction repaired to the shore, where they took in their
e children who were to carry the cow-pox to the indigenous Ameri-
nd the Malays of the Philippine Islands, and followed with public
ations, they laid at the foot of the altar those precious preservative
s, returning thanks to the Supreme Being for having been the wit-
of so happy an event. We must have some knowledge of the ravages

* ment to the Madrid Gazette, October 14, 1806. Phila. Medical Museum; vol. 3; 1807; p. 237.

occasioned by the small-pox in the torrid zone, and especially among a race of men whose physical constitution seems adverse to cutaneous eruptions, in order to feel all the importance of Dr. Edward Jenner's discovery. It appeared to be a much greater blessing for the equinoctial part of the New Continent than for the temperate climate of the Old.*

THE RELATIONS OF GREASE IN THE HORSES' HEELS TO COW-POX.

HORSE-POX.—The facts concerning the origin of the cow-pox were investigated by Edward Jenner before the publication of his "Inquiry." His nephew, George Jenner, in the year 1787, went into the stable with him to look at a horse with diseased heels. "There," said he, pointing to the horse's heels, "is the source of small-pox. I have much to say on that subject, which I hope in due time to give to the world."

Writing to a friend in 1794, Jenner observes:

"Our friends at our last meeting treated my discovery of the origin of the cow-pox as chimerical. Further investigation has convinced me of the truth of my assertion beyond the possibility of a denial. Domestication of animals has certainly proved a prolific source of disease among men. But I must not anticipate; you shall have a paper."

Subsequently to this letter, and before the publication of his "Inquiry," in 1798, Jenner made many experiments in order to determine the connection between the grease and the cow-pox; but difficulties of a nature not easily overcome interfered with his success. On the fourteenth of May, 1796, he made his first experiment, which demonstrated the possibility of propagating the cow-pox from one human being to another. From this period till the spring of 1798, Dr. Jenner's researches were interrupted by the disappearance of the cow-pox from the dairies. It again showed itself, and he had an opportunity of repeating his inquiries. Before bringing out his *Inquiry on the Variolæ Vaccinæ*, he was desirous of proving by direct experiment the truth of his opinion as to the origin of cow-pox, which at that time rested only on circumstantial evidence. Being foiled in his hopes of seeing more of that disease in its usual form in the dairies, he made many efforts, in 1797, to generate it from the heel of the horse. In reference to these experiments he wrote on the second of August, 1797, to a friend in the following terms:

"The simple experiment of applying the matter from the heel of the horse, in its proper state, to the nipples of the cows when they are in a proper state to be infected by it, is not so easily made as at first sight may be imagined. After waiting with impatience for months in my own neighborhood, without effect, I sent a messenger to Bristol in vain to procure the true virus. I even procured a young horse, kept him constantly in the stable, and fed him with beans in order to make his heels swell, but to no purpose. By the time the pamphlet goes to a second edition, I hope to be able to give some decisive experiments."

At the time of the publication of the "Inquiry," with regard to the opinion that the source of the infection of cow-pox "is a peculiar morbid matter arising from the heel of the horse," Jenner believed that, though it had not been completely proved by actual experiments made under his own eye, it nevertheless was supported by evidence sufficiently strong to establish it.

When the inquiry was presented he imagined that the matter excreted in the heel of the horse required to be modified by passing through the system of the cow, in order to afford it the peculiar protecting power which it

*Political Essay on the Kingdom of New Spain, by Alexander De Humboldt; London. 1811; vol. 2, pp. 111-118.

inced when it appeared in the shape of what is vulgarly called cow-pox the hands of the milkers. In the infancy of the investigation this was most natural conclusion; but subsequent trials found that the *equine* atter, which had *never* undergone any change from passing through the nstitution of the cow, exhibits all the characters of, and affords all the curity which can be obtained from vaccine matter strictly so called.

The following remarks of Dr. Jenner will illustrate this statement:

"The skin of the horse is subject to an eruptive disease of a vesicular character, which sicle contains a limpid fluid, showing itself most commonly in the heels. The legs first come œdematous, and then fissures are observed. The skin contiguous to these fissures, en accutely examined, is seen studded with small vesicles surrounded by an areola. ese vesicles contain the specific fluid."

"It is the ill management of the horse in the stable that occasions the malady to appr more frequently in the heel than in other parts. I have detected it connected with ore on the heels of the horse, and on the thigh of a colt."

It has been established by unquestionable evidence that matter from the rse *does* produce a pustule similar in appearance to the vaccine; and lewise possessing the same protective power; and *that*, without having ssed through the constitution of the cow. This fact, though it tends to ve the close relationship, if not the absolute identity of the diseases, es not prove that they both originated in the horse; but it strongly conrms the views of the simultaneous origin of the affections in question.

t seems certain that there are, at least, *four* animals, namely, the horse, sheep and the goat, which are affected with a disorder communicable man; and capable of securing him from what appears to be a malignant n of the disease. It has, moreover, been proved by direct experiment, t other animals are capable of receiving the vaccine disease by inoculan; and that matter taken from pustules so produced affords the genuine -pox in man. These animals on which these experiments have been d are the dog, the goat, the she-ass, and the sheep. The fact with reds to the dog was ascertained by Dr. Jenner; with respects to the other nals, the facts rest on the authority of Valentine, of Nancy, who made experiments in 1801–2, in communicating the human small-pox to dogs, s and swine; he asserted also, that it had been proved by experiments the Royal Veterinary College at Berlin, that the cow likewise receives small-pox by inoculation.*

is perhaps to be regretted that Jenner employed the word *grease*, ind of the *Variolæ Equinæ*. The *grease* has no necessary connection with horse-pox *(Variolæ Equinæ)*, though the disorders frequently co-exist. circumstance at first misled Dr. Jenner, and caused much misapprehion and confusion. The mistake in considering the disease, vulgarly d the *grease*, as the source of the cow-pox was subsequently corrected r. Jenner himself; and he recognized the fact that the horse, as well e cow, is liable to an eruptive disease of a variolous character, and this disease of the horse, when communicated to man, is capable of ding protection against small-pox, even though it had never passed gh the cow. For the most part, however, the equine affection was m recognized in the dairies, except in connection with a similar disin the cow.

cording to Dr. John Baron†, the last observation of Dr. Jenner on ariolæ Equinæ was in 1817. Dr. Baron copies the following memdum from a manuscript written by Dr. Jenner on the first of April,

* al and Physical Journal, September, 1802, p. 271.

† ife of Edward Jenner, M. D., F. R. S., etc. London, 1838. Vol. 2, p. 226.

"Rise and progress of the equine matter from the farm of Allen of Wansell—From a horse to Allen; from Allen to two or three of the milch cows; from the cows to James Cole, a young man who milked at the farm; from James Cole to John Powell, by inoculation from a vesicle on the hand of Cole; and to Anne Powell, an infant; from Powell to Samuel Rudder; from Rudder to Sophia Orpin and to Henry Martin; from Henry Martin to Elizabeth Martin. All this went on with perfect regularity for eight months, when it became intermixed with other matter, so that no journal was kept afterwards. Proof was obtained of the patients being duly protected."

Another entry on the seventeenth of May runs thus: Took matter from Jane King (equine direct), for the National Vaccine Establishment. The pustule beautifully correct."

The matter from this source is said to have been extensively diffused in England and Scotland. Some years before 1817, Mr. Melon, of Litchfield, had found the equine virus in his neighborhood, and sent a portion of it to Dr. Jenner.

In 1818, Dr. John Baron sent Dr. Jenner some equine matter, which he obtained from the hands of a boy who had been infected directly from the horse. In this case the disease assumed a pustular form, and extended over both arms.

Dr. Jenner thus acknowledges the reception of this matter:

"April 25, 1818.

"Yesterday H. Sharpnell brought me the equine virus and your drawing, which conveys so good an idea of the disease, that no one who has seen it can doubt that the vesicles contain the true and genuine primative fluid. I have inserted some of it into a child's arm; but I shall be vexed if you and some of your young men at the Infirmary have not done the same with the fluid fresh from the hand. * * *

"With best affections, yours, my dear doctor, very truly,

"EDWARD JENNER."

We have thus given the facts which referred to Dr. Jenner's experiments, and conclusions as to the relations of cow-pox to the grease and horse-pox; it should be noted that valuable observations were made by others upon this subject at an early date in the history of vaccination.

As early as 1800, Mr. Tanner, a veterinary surgeon at Rockhampton, raised a perfect vaccine vesicle on the teat of a cow, by first removing a scab from the surface of an accidental sore, and then rubbing over the sore the limped matter taken from the heels of a horse afflicted with what he regarded as the grease. Lymph taken from the vesicle thus raised was successfully transferred to the human subject, and a stock of vaccine thus obtained, some of which was sent to Jenner, and through him to the Small-pox Hospital. (*Ring's Treatise on the Cow-pox, p.* 336.)

Mr. Lupton, of Thame, in Oxfordshire, in 1800, correctly pointed out that the disease of the horse, which was analogous to cow-pox, and was communicable to the cow, was *not* "the *grease*," nor any form of grease, but a disease, regarded by the farmers of the neighborhood, as widely different from it, and to which they gave the name of the "scratchy heel." (*Medical and Physical Journal, vol.* 4, *November*, 1800.)

In 1801, Loy, after many unsuccessful attempts, succeeded in infecting four cows, by inoculation with lymph from a "*greasey*" horse which with considerable indisposition had a generalized eruption.

Loy observed that the horses "that did not communicate the disease had a local affection only."

He was led by his experiments to distinguished two forms of grease, the acute and the chronic, the former of which alone he regarded as capable of imparting the cow-pox to the cow or to man, and then only when the matter was taken at the proper period of the vesicle. (*Loy, Experiments on the Origin of the Cow-pox, vol.* 8, *Whitley*, 1801.)

In 1803, Dr. La Font, a French physician at Salonica, was successful in producing the perfect vaccine vesicle in two young children with lymph, taken direct from a horse suffering from a disease which was known to the Macedonian farmers as "*grease*," but which they distinguished from ordinary *grease* by the epithet, "the variolous." The preservation of this fact is due to the great and zealous advocate of vaccination, Dr. De Carro.

DR. DE CARRO TO DR. JENNER.

VIENNA, June 21, 1803.

"*My Dear Sir*—My friend, Dr. Marcet, wrote to me lately that the account I have sent you of Dr. Sacco's experiments have afforded you great satisfaction. The motive which induces me to write to you to-day is another confirmation of your theory, which has taken place in a country where you scarcely expect it from, the more so that it is accompanied with veterinary observations which appear to me very nice and curious.

Monsieur La Font, a French physician established at Salonica, in Macedonia, has been one of the most active vaccinators I know on the Continent; his last letter, of the third of June, mentions that he has since last autumn vaccinated 1130 persons. He first heard of your discovery on the occasion of Lord Elgin traveling in Greece with Dr. Scott, during which journey his lordship and the doctor took a particular care of propagating vaccination. The English Consul at Salonica went to Athens to meet Lord Elgin; there he saw a large number of young Athenians with vaccine pustules. Not a word had yet been heard at Salonica of your discovery, and he desired Dr. Scott to give him vaccine matter to put into the hands of Dr. La Font, and Lady Elgin was so kind as to give to the Consul a copy of my work for the instruction of his physician. The first Athenian matter did not succeed, but seeing its failure Dr. La Font applied directly to me, and the ivory lancets produced their effect at the first trial. Since that time I have been in regular correspondence with that physician, who appears to me to be possessed of much learning, prudence and activity.

Some time afterwards I sent him a translation of Dr. Loy's experiments, and desired him to make as many veterinary observations and experiments as he could. He has some reasons to suppose that the cow-pox reigns in that country, according to the reports of several Albanian peasants. As to the "*grease* (which he calls javart), he says that the farmers at Salonica know it well. Dr. La Font began his experiments with the kind of disease which the Macedonian farriers call *variolous*. He found a horse which had been attacked with feverish symptoms, that ceased as soon as the eruption appeared. The hind legs were much swelled; the left had four ulcers, one upon the heel, a second some inches higher, a third on the articulation, a fourth near the breast. The eruption on the hind was, he says, very like the small-pox, but none was to be seen on the other parts of the body. He took matter from the upper ulcer which was of twelve days standing.

The matter was limpid, but a little yellowish and filamentous (three only); first, a cow was submitted to this inoculation, but without success; secondly, a girl twelve years old, without effect; but this girl had been vaccinated some months before without success, and was suspected to have had the small-pox; thirdly, two boys, one six, the other five years old, were inoculated with the same *equine* matter, and in both a pustule appeared, which followed the regular course of a vaccine pustule. The color was less white and more purple than usual. These two children had a pretty strong fever, for which some purging medicines were administered. Those inoculated with matter from them undergo the disease in the usual mild way.

These particulars, I hope, will silence all those who still doubt of the method of your doctrine. These observations enhance the merits of your discovery. The *means* of making it were everywhere, yet nobody before you had the least idea of that singular connection between the grease, the cow-pox and the small-pox." (*Life of Edward Jenner by Baron; vol.* 1, *p.* 431.)

Coleman, whose early attempts had failed, at a subsequent period succeeded in infecting a cow with matter taken direct from the heels of a horse, and in propagating vaccine from the vesicles thus induced.

Direct inoculations were made by Viborg and by Kahlert on cows, and by Sunbeck, both on cows and children; and Sacco and several others succeeded in producing on human subjects perfect vaccine vesicles with lymph taken from sores (vesicles) on the hands of individuals, which sores they were quite satisfied had been derived from the horse.

France, from the general negative results of repeated inoculations from horses' heels, doubts of the existence of an equine-pox seemed to have been largely entertained up to a very recent period; and Bosquet, re-

viewing, in 1848, the whole of the experiments and observations up to tha time, declared himself unsatisfied as to whether cow-pox had ever been de rived from the horse or not. *(Nouveau Traité de la Vaccine, p. 436.)*

But within the last twenty-three years, the doubts of this connectio of variolæ vaccinæ with variolæ equinæ, have been set at rest amongst th French physicians.

Two outbreaks of the disease among horses—one near Toulouse in 186 and one at Alfort, in 1863—gave rise to inoculations, the results of whic were acknowledged to be entirely unequivocal. These outbreaks were care fully observed and the phenomena of horse-pox well described.

M. Bresley, in 1863, induced the horse pox, by inoculation in the hors and other animals—the equine lymph being transferred from horse to horse

Dr. Edward C. Seaton has given the following observations upon th horse-pox in his valuable "Handbook of Vaccination," which we hav classified and condensed:

ARTIFICIAL PRODUCTION OF HORSE-POX BY INOCULATION

The horse-pox has been designedly induced in the horse and other ani mals of the horse tribe by inoculation; *(a)* with equine lymph directly transferred from horse to horse; this was done on numerous occasions, an with great success, in 1863, by M. Bonley (Bulletin de l'Académie, tom 29, p. 236) *(b)* with equine lymph that had been passed successfully through a cow, producing in that animal all of the phenomenon of the genuine in oculated cow-pox; this was done both in 1860 at Toulouse by M. Lafoss (Rapport de l'Académie Impériale de Médecine sur les Vaccinations pen dant l'Année, 1861), and in 1863 at Alfort by M. Bonley, and at the Jardi d'Acclimatisation at Paris (Bulletin de l'Académie, tome 29, pp. 131, 13 and 199); *(c)* with lymph, supposed to be unhumanized cow-lymph, not pri mary, but the product of a series of transmissions of primary lymph through animals of the ox tribe; this was done by M. Chauveau and his col leagues (Vaccine et Variolæ, etc., of Cit,); and *(d)* with ordinary human ized vaccine lymph; an experiment thus made, in 1862, by MM. Rayer and De Paul, at Alfort, resulted in the production of eight well-characterize vesicles, perfectly circular, with central depression and induration of th whole surrounding thickness of the dermis.

In the horse-pox induced by the ordinary process of inoculation, erup tion is limited, with rare, if any, exceptions, to the points of inoculation The local phenomenon are less active than in the natural disease, but th course of the disease is essentially the same.

ARTIFICIAL PRODUCTION OF HORSE-POX BY INJECTION OF LYMPH.

A variety of inoculation, viz., that of *injecting* the liquid vaccine lymph into the blood vessels or lymphatics of horses has been attempted by M Chauveau, with the design of producing, if possible, by this method, th more extended or generalized eruption, which in this tribe of animals fre quently attends the natural, or, as it is called, spontaneous disease.

M. Chauveau inoculated from old horses by injecting some vaccine lymph into a blood vessel, and four more by injecting into a lymphatic vessel, just before its entrance into a ganglion. The first series of experiments failed but of the animals in the second series (those inoculated through th lymphatics) the inoculation succeeded in three out of the four, producing a fine eruption of vaccine, which had all the characters of the spontaneous

orse pox. One, a horse, had a full eruption, commencing at the end of even days, and completely developed in three or four days more, on the ostrils and lips, as well as on the hind heels; the second, a mare, infected om the preceding, had isolated vesicles disseminated over the body, ex- pt the neck and posteriors, but chiefly in the mammary region and on the s, the eruption commencing on the eighth day, and continuing to appear to the fourteenth; and the third, a man, had, on the twelfth day, an uption chiefly on the genital organs and the inner surface of the thighs. ed virus, taken from the eruption on *each* of these animals, produced, it said, regular vaccine both on the cow and on children. Subsequently . Chauveau succeeded in inoculating a young colt by two injections of ccine lymph, at intervals of two days, direct into the sanguineous system rough the jugular vein; vesicles beginning to appear, principally in the so-labial region, in twelve days, and continuing to appear for four ys more, the lymph of which was found to produce regular vaccine both a child and on animals of the ox tribe.

Following out still further the same idea, M. Chauveau, by injecting vac- ne into a pouch formed in the subcutaneous cellular tissue on the left side the neck of a colt, but with great care that the lymph should not touch e wounded skin, obtained no local vesicle, but an eruption, commencing the tenth day, of a few vesicles on the naso-labial region. From these sults, in connection with the fact that nearly thirty successful inocula- ns of horses with the vaccine lymph in the ordinary way, no general uption followed, M. Chauveau concludes that one essential condition of a *eralized eruption* to be that the virus should not pass through the mem- ane which is the anatomical seat of the vaccine eruption.

M. Le Blanc, however, states that he has seen *general* eruption to occur a case in which inoculation had been done in the ordinary way, and that proved the vaccinal character of the vesicles secondarily developed by inating successfully from them, both horses and ruminants. (Chauveau, s Conditions qui président au Développement de la Vaccine dite Primitive; lletin de l'Acad. Imp. de Med.; tome 31; also, Comptes Rendus de l'Acad. Sciences, tome 62, p. 1118, and tome 63, p. 573.)—*A Hand-Book of Vac- ation, by Edward C. Seaton, M. D., Medical Inspector of the Privy Council,* 29-33.

CHARACTER AND COURSE OF HORSE-POX.

t is evident from the preceding facts, that the HORSE, like the COW, is ject to a specific eruptive fever, resulting in the development of a pock, material of which has the same property as the fluid of cow-pox, pro- ing the human system, when inoculated with it, from small-pox. This k has the outward appearance and the anatomical structure which dis- guish the vesicles of cow-pox. The chief point in which the diseases as n in the horse, differ from that in the cow are, (1) the locality of the ption—which is chiefly on the heels, and on the naso-labial mucous brane; (2) the tendency of the eruption in some cases to become gen- ized over the body; and (3) its appearance in the male as well as in female, horses being subject to it as well as mares.

he disease differs so little in its course from the cow-pox in the cow, very minute description is not necessary. The chief distinction is as e part of the body affected, which in the horse is principally the hind ; the eruption being generally more copious there than anywhere , and seldom extending beyond the hocks, except as the result of auto- ulation. It is, no doubt, from its great exposure to this kind of inocu-

lation that, after the heels, the naso-labial mucous membrane is the chief seat of eruption. In some cases the vesicles seen in this membrane may be primary; and there are said to have been cases in which this membrane was the sole seat of the disease. Occassionally, especially in certain epizootics, the eruption has been seen extending over the body, in greater or less abundance, from the heels to the belly, and from the head to the tail. This general eruption, when it occurs, may come on in the course of the disease, and after the usual local symptoms have manifested themselves, or the generalization may be noticed from the very outset.

The course of the disease is this: There is a period of invasion, sometimes accompanied with fever, which, if it occur at all, is, in the great majority of instances, very trifling; then, on the posteriors and other parts about to develop the eruption, points are felt, or seen, which soon acquire prominence and take the form of pimples, becoming rapidly flattened and umbilicated at the centre. These, by the eighth or ninth day, are fully developed, mostly circular, and of the size of a big lentil, notably elevated above the skin, resisting pressure, and having a well-marked surrounding induration. They have absolutely the same structure as the vaccine or variolous vesicle, and yield, although generally in small quantity, a viscid slightly yellowish lymph. By the ninth, tenth, or eleventh day many of them burst, exuding, often copiously, a viscid, serous, or sero-purulent fluid, incrustation going on progressively and forming scabs or crusts, which from the fifteenth to the twenty-fifth day, detach themselves, leaving whitish superficial vesicles. Varieties are observed, as in cow-pox, some of the vesicles being smaller and later than others, some less markedly umbilicated, some not umbilicated at all. They are most developed on the parts that are naked or have little hair, or where the skin is fine. If the hair be long and close, they are smaller and less regular, and attentive observation is often necessary to make out their existence; little pencils of hair will be seen standing up here and there, and if the finger be lightly moved over these spots, slight indurations will be felt, corresponding to pimples or vesicles, which may be brought to light by cutting the hair away. The horse-pox, like the cow-pox, is communicated from animal to animal by casual inoculations, immediate or mediate, and these inoculations are the main cause of the spread of the disease.

Horse-pox should be distinguished from *grease* on the one hand and Aphtha epizotica on the other.—*A Hand-Book of Vaccination, by Edward C. Seaton, M. D., Medical Inspector of the Privy Council, pp.* 27-29.

GENERAL DESCRIPTION OF COW-POX—OBSERVATIONS ON COW-POX BY ROBERT CEELY—ILLUSTRATION OF THE APPEARANCE OF THE HABITUAL COW-POX.

The cow-pox was thoroughly investigated by Edward Jenner, and he is also said to have exhibited drawings of the appearance of the disease in the cow.

The natural history of vaccinia in the cow has been studied more or less by various other observers, but by none so accurately or so comprehensively as by Robert Ceely, of Aylesbury, who, in 1839, showed in a satisfactory manner that by operating upon the mucous surfaces, instead of the more insensible corion, the cow can be made with facility to receive the variolous poison, which the constitution of that animal converts into vaccine. These important experiments were instituted under the auspices and supervision of the Provincial Medical and Surgical Association, in whose transactions (vols. 8 and 9) they are detailed at great length.



Fig. 80. The Casual Cow-Pox in the teats and udder of a black and white milch cow. After Mr. Ceely, of Aylesbury.

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To facilitate the labors of the medical profession with reference to the cognition and propagation of the cow-pox, we have reproduced the companying plate of the vaccine disease, as it appears in the cow, from e illustrations of this affection by Mr. Ceely, of Aylesbury, England.

The plate illustrates the appearance of the *casual* cow-pox in the teats d udder of a black and white milch cow. *Plate* 19, *Figure* 80.

The disease is at its acme; and the skin being fair a slight areola is sible around some of the vesicles, many of which have a bluish central t. It exhibits papular vesicles with central crusts, unacuminated and uminated vesicles; imperfectly developed and also broken vesicles, both itary and interfluent. The vesicles on the extremities of the teats are arly of the color of the skin on which they are placed, a circumstance of elf sufficient to distinguish them from spurious or sub-epidemic vesicles.

ENERAL DESCRIPTION OF COW-POX—COURSE OF LOCAL PHENOMENA—DURATION OF THE VARIOUS STAGES OF COW-POX—CONSTITUTIONAL SYMPTOMS—SPURIOUS COW POX—DIAGNOSIS OF TRUE COW-POX.

Cow-pox is a specific eruptive disease, of the vesicular order, the erup- n not being general over the body, but limited, to the udder and teats of cow, the only exceptions being the results of accidental or casual in- ulation. Cow-pox is met with from time to time, in various countries, ner sporadically or as an epizootic, attacking particularly milch cows; ung cows and milch heifers appearing to be more subject to it than older ws. In its earlier stages it is attended with so little general or obvious al disturbance that, in the animals first attacked in a dairy, these stages lom come under skilled observation; and, as the fluid of the vesicles is y infective, and the disease is thus readily conveyed from animal to ani- l by the milkers, it is difficult to distinguish, in animals subsequently acked, between those exhibiting the natural disease and those who have n infected casually by inoculation. There is first a period of incuba- n; but, from the extreme slightness of the earliest symptoms, it is very ficult to say how soon after infection has been received these may mani- t themselves. In the *natural* disease the incubative period is probably ee or four days, though in some cases it may be prolonged to from five eight days. The earliest symptoms noted are heat, swelling and tender- s of the udder, soon followed by irregularity of surface and develop- nt of hard papules, about the size of a vetch or pea, especially on that t of the udder which adjoins the basis of the teats, and on the basis of t teats themselves. There is not generally at this stage, any loss of petite, manifestation of fever, or other sign of constitutional disturb- e. In the *casual* disease, or that which arises from infection by the un- entional inoculation of the milkers, it is very rare for any indications of tagion to manifest themselves till the sixth or seventh, sometimes they not appear till the eighth or ninth day after undoubted exposure; but hin-skinned animals with cracks or chaps in the teats, small red tender ules may often be found by vigilant observation as early as the fifth . The papules increase in size as the disease goes on, and in three or days from their first appearance, many of them will be found to have uired a distinct vesicular character, with more or less central depression. first change from papule to vesicle is indicated by the appearance of a or dusty yellowish point at the apex of the pimple, the circumference n increases in substance and extent, and the centre becomes wider and

deeper, till at last the flattened vesicle with depressed centre is formed. As with the papules, so with the vesicles, there is gradual increase of size, until in three or four days more their full development is attained, the number, size, shape and color of the vesicles, differ much in different animals, as well as in different parts of the same animal.

There may be only one or two of them, but much more frequently there are ten, twenty or more; they are more common on the base, neck and body of the teats. The amount of eruption, and consequently the severity of the disease, depends greatly on the state of the teats and udder. With a short, compact, hairy udder, and thick, smooth, terse, unchapped, or scarcely cracked teats, the affection is often very mild, and sometimes there is only a single vesicle. An animal with a voluminous, flabby, cracked, pendulous udder, and loose, long teats, the skin of which is thin, fissured, rough and unequal, scarcely ever escapes a copious eruption. The size of the vesicles varies from that of a large pin head to that of a sixpence, or bigger, but is most ordinarily that of a vetch, pea, or horse-bean; in general, the more numerous the vesicles are, the smaller they are. Their shape is determined chiefly by their position. Around the base or neck of the teats they are almost invariably circular; on the body of the teats, generally ovai, but oval vesicles may be seen also on the udder; and the vesicles on the teats are often interfluent. The color of the vesicles varies according to the period of their progress, and according to the color and texture of the animal's skin; but they have always a metallic-glistening aspect. By the time that the vesicle is completely formed, it is frequently seven or eight lines wide; but a solid, uniform, terse, and shining margin, a glistening white, pinky, or silvery hue, and a bluish or slate-colored centre; it contains a clear, viscid lymph, which, however, is even at this period generally in small quantity and often difficult to obtain; and around its base there is a narrow, pale-rose, or light-damask areola, not more than a line or two wide, and sometimes scarcely so much, though subsequently extending with circumscribed induration of the adjacent skin and subjacent connective tissue. The color of the areola, like that of the vesicles, is greatly influenced by the hue and texture of the skin, and in some skins—as in dark, thick ones—the areola is scarcely to be seen, or is entirely absent; but the induration is always palpable. Between the tenth and eleventh days the disease has generally reached its acme; the areola has extended, though seldom to more than a width of from four to five lines, and there is deep induration of the underlying integument. The vesicles, such as have not been broken, are at their fullest development; lymph, which two days before was hard to get from them, is now so copious that it raises the cuticle, destroying the central depression and forming a globular or conoidal vesicle, or it bursts the cuticle and flows freely out; it has already acquired, or soon acquires, a pale, straw-colored, or light-amber hue, and speedily becomes mere scum, turbid and opaque. While this is taking place in some vesicles, in others the process of incrustation will already have begun at the centre, and in others it may have even extended to the circumference. On and after the twelfth day nearly all is passive; the incrustation process continues steadily to advance, and by the thirteenth or fourteenth day the crusts have usually acquired their greatest magnitude, are of a brownish-black color, adhering more or less tenaciously to the epidermis or skin beneath, the marginal induration and intumescence at the same time subsiding. The crusts after this go on drying and shrinking, and they fall off usually from the twentieth to the twenty-third day, by which time the induration has nearly, but seldom wholly, disappeared. The cicatrices left after the falling of the crusts are shallow, *smooth*, oval

circular, and of pale-rose, white or whitish color, according to the contrast of the surrounding pigment. The vesicles on the teats are attended generally with less areola and less induration of circumference than those on the udders, but in other respects, in so far as they are undisturbed, and out of the way of the milkers, they exhibit exactly the same phenomenon and undergo precisely similar changes.

Such is the course of the *undisturbed* eruption, but from the tractions of the milkers it seldom happens that the vesicles, where they are most numerous, as on the base, neck and bodies of the teats, escape disturbance. By the eighth or ninth day, when the uninjured vesicles are the most perfect, the red ones will be found exuding lymph from their centres, the cuticle being loose or partially detached. Raw surfaces, and brown and black crusts will be intermingled, and here and there will be seen a conoidal vesicle, often with slightly depressed apex, distended with pellucid lymph. Four or three days later the appearance on the teats will exhibit crusts, large, black and solid, often more than an inch or two in length, some firmly adherent to a raw and elevated base, others partially detached from a raw, red and bleeding surface; many florid red, ulcerated surfaces secreting pus and exuding blood; the teats excessively tender, hot and swollen, not unfrequently one or more forming a tumid mass of black crusts and naked ulcers, the discharge from which imparts to the finger an odor very closely resembling that of the last stage of small-pox. In some animals this state will continue for a week or two, but in others the process of healing will go regularly on, crusts being continually formed and renewed, till at last they fall off and leave cicatrices generally regular, smooth, circular or oval, but occasionally deep and irregular.

With reference to the *duration of the various stages of cow-pox*, it appears that the normal course of the disease occupies from twenty to twenty-three days, which may be divided into four stages, namely:

(*a*) About four days of early symptoms, during which papulation takes place.

(*b*) Six or seven days to the full development and perfect maturation of the vesicle.

(*c*) Five or six of decline of the vesicle and formation of the crusts.

(*d*) Five or six more from the completion of incrustation to the spontaneous separation of the crusts.

Stages *(a)* and *(b)* are often materially abridged in the natural disease, while in the casual disease *(a)* is sometimes prolonged, *(b)* being proportionately abridged or *(a)* is prolonged, *(b)* and all subsequent stages occupy the normal duration. These variations, however, in the early stages of the disease are often more supposed than real, the earliest symptoms being so extremely slight in many cases that they are overlooked. Both in the natural and casual cow-pox *(c)* is sometimes prolonged, often abridged. The whole of the cow-pox eruption is not by any means always simultaneously developed. Papules, depressed vesicles, acuminated or globular vesicles, and vesicles more or less desiccated, ranging in size from a pin's head to a diameter of eight or ten lines, may be seen on the same subject at the same time; but all, whatever their date of appearance, terminating together. No doubt these apparent anomalies are due either to self-inoculation of the cow from pressure, as in the act of lying down, or still more frequently to the manipulation of the milker.

Structure of the Cow-pox Vesicle.—If we examine the anatomical structure of the cow-pox vesicle, when completely formed, we find it consist of a number of cells, which appear to be arranged in two concentric rows, and are separated from each other by whitish radiating partitions united

at their converging extremeties by a central membraneous band. In the cells is secreted and contained a clear viscid lymph. The dusky centr spot, which marked the first change of the pimple into the vesicle, an which has now become darker and more distinct, seems to be caused by greater or less degree of separation of the epidemics stretched over crypt-like recess, which contains a small quantity of semi-concrete lymph like matter and occassionally a turbid opaque fluid. This cellular co formation of the vesicle is essential and diagnostic. It is by the burstin and breaking up of the cells and their connecting band, as the lymph b comes more abundant and less viscid, and by separation of the epiderm from its attachment to the subjacent adventitious membrane, that th vesicle in its further progress loses its distinctive central depression, an acquires the acuminate or convidal form, which has been described.

Constitutional Symptoms.—The local symptoms of cow-pox in the cow a seldom accompanied by any material constitutional disturbance; in th great majority of animals, feeding and grazing go on as usual. The secr tion of milk is sometimes diminished; and, in most instances, the amou artificially obtained is greatly lessened from the trouble and difficul of milking. In some cases the cow exhibits in the course of vaccin a peculiar vesicular eruption very like vesicular varicella. It occurs ge erally about the ninth or tenth day, commencing with erythemato-papul elevations, which in twenty-four hours have become vesicles full of pell cid serous fluid. Next day this fluid is straw-colored, and it becom speedily turbid, the cuticle collapses or bursts, turns yellowish-brown, a before the fifth day from their origin, the vesicles desiccate with brown black thin flimsy crusts, which soon fall off.

Spurious Pocks.—The cow is liable to other diseases, which more or le resemble cow-pox, and from which it is important to distinguish it—a d tinction all the more necessary that some of these diseases may, and fact not uncommonly do, either co-exist with it, or immediately precede follow it. Besides certain cutaneous, sub-cutaneous and follicular infla mations and suppurations on the udder and teats, which are liable to affe occasionally the hands of the milkers, warty growths and even warty ve cles, and eczema, or other superficial vesicular eruptions, three kind spurious cow-pox have been described by Ceely.

The Yellow Pock, a pustular eruption, resembling ecthyma on the tea and udders, succeeded by thin dirty-brown, or black irregular crusts.

The Bluish or Black Pock.—Bluish or black or livid vesications on t teats and udders, followed by thin dirty-brown or black irregular crust and some degree of impetigo on the interstics, near the base of the teats.

The White Pock.—A highly contagious disease among milch cows and the milkers, quickly causing vesications and deep ulcerations, often or ways confounded by them with the true vaccine, and certainly not readi distinguishable in all its stages by better informed persons than milkers.

Diagnosis of True Cow-pox.—Although broad and palpable grounds distinction may be found between *vaccinia* and *white*-pock, in the charact of the genuine vaccine eruption, its cellular structure, its hard and knot feel, its glistening aspect, its tardy and progressive changes to the vesic lar form, its central depression and its late acumination, the necessity f caution and accuracy of diagnosis must be borne in mind. Edward Jenn pointed out that milkers were very liable to contract infection from spurio pocks, and to acquire in consequence false and delusive ideas as to the having immunity from small-pox; and Ceely states that he has in sever instances known milkers who undoubtedly had made this mistake suff afterwards from small-pox, while in other instances he has discovered t

take he had made in time to save the subjects of it from small-pox, by performing successful vaccination in the ordinary way. The white or later-pock in the human subject exhibits sometimes, in fact, an appearance exceedingly like that of real cow-pox, so that, as in the case with the two diseases in the cow, some care may be necessary to distinguish them. It is communicable by inoculation from one human subject to another, and may be communicated repeatedly to the same subject. Mr. Ceely successfully inoculated himself three or four times with the virus of white or later-pock. Other diseases of the cow besides white-pox may be contracted by milkers and communicated from them to other human subjects. Mr. Ceely relates a case in which a whole family (a wife and five children) suffered under a *pustular* disease of the character of ecthyma, from infection by the father, who had himself caught the disease from a cow, described as being in a terrible condition.—*Robert Ceely, Transactions Provincial Medical and Surgical Association, vol.* 8, *vol.* 10. *A Hand-Book of Vaccination, by Edward C. Seaton, M.D., Medical Inspector to the Privy Council; London; Macmillan & Co.*, 1868; *pp.* 1-11.

COW-POX—RELATIONS OF COW-POW TO NATURAL AND INOCULATED SMALL-POX.

COMPARATIVE VIEW OF THE NATURAL SMALL-POX, INOCULATED SMALL-POX AND COW-POX—MICROSCOPICAL CHARACTER OF THE COW-POX, (VACCINE) LYMPH, AND OF THE CONTAGIOUS MATTER FROM THE PUSTULES OF SMALL-POX—COMPARATIVE PHENOMENA OF INOCULATED SMALL-POX AND COW-POX—COMPARATIVE PHENOMENA AND RELATIONS OF VARIOLA AND VARIOLOID—DETAILED DESCRIPTION OF THE ILLUSTRATIONS OF COW-POX, VACCINE DISEASE, CONFLUENT SMALL-POX DISTINCT SMALL-POX AND VARIOLOID—DEVELOPMENT AND STRUCTURE OF THE SMALL-POX PUSTULES—CHANGES OF THE TEMPERATURE AND URINE IN VARIOLA (SMALL-POX) AND IN VARIOLOID (MODIFIED SMALL-POX).

COMPARATIVE VIEW OF THE NATURAL SMALL-POX, INOCULATED SMALL-POX AND COW-POX.

The relation of INOCULATED COW-POX (*Vaccina*), to the natural and inoculated small-pox, were formulated in terse and unequivocal terms, shortly after the discovery of Jenner had resulted in the foundation of the Royal Jennerian Society.

The views held and propagated by the advocates of vaccination, were condensed and forcibly expressed in the following *comparative view of the natural small-pox, inoculated small-pox and inoculated cow-pox*, drawn up by Dr. Addington* and published by order of the Medical Council of the Royal Jennerian Society, for the extermination of the small-pox.

* Medical Repository, etc., Second Hexade, vol. 1, New York, 1804, p. 313.

A COMPARATIVE VIEW OF THE NATURAL SMALL-POX, IN-OCULATED SMALL-POX AND COW-POX.

NATURAL SMALL-POX.

HISTORY, GENERAL CHARACTER, MORTALITY.

Circumstances, independent of contagion and mortality, viz: Danger, eruptions, confinement, loss of time, expense, requisite precautions, medical treatment, deformity and subsequent diseases.

For twelve centuries the disease has been known to continue its ravages, destroying in every year an *immense* proportion of the whole population of the world.

A contagious disease, in some instances mild, but for the most part violent, painful, loathsome and dangerous to life.

One in six who have the disease dies. At least half of mankind have it; consequently one in twelve of the human race perish by one disease. In London, 3000 annually; in the United Kingdom, 40,000

1. One in three has the natural small-pox in a dangerous form.
2. It produces eruptions, numerous, painful and disgusting.
3. Occasions confinement.
4. Loss of time; and
5. Expense more or less considerable, affecting individuals, families, parishes, etc.
6. Renders precautions for the most part unavailing.
7. Medical treatment necessary both during treatment and afterwards.
8. Leaves pits, scars, seams, etc., disfiguring the skin, especially the face; and, is followed by *scrofula* in every form, diseases of the skin, glands, joints etc., blindness, deafness, etc., etc.

INOCULATED SMALL POX.

A *contagious disease*, for most part mild, but in some instances *violent, painful, loathsome, and dangerous to life.*

One in three hundred inoculated dies.

In London, probably *one in one hundred.*

The inoculation of the small-pox having been but partially adopted, has become the means of spreading the infection, and has thus increased its general mortality. In London this increase has been in the proportion of *seventeen* in every *thousand.*

1. One *in thirty or forty has had inoculated* small pox in a dangerous form.
2. It produces eruptions in greater or less numbers.
3. Occasions confinement.
4. Loss of time; and
5. Expense, sometimes considerable.
6. Requires preparation by diet and medicine; care to avoid certain seasons, as extremes of heat and cold certain periods of life, as early infancy and old age and certain states of constitution, as general ill health, teething, pregnancy, etc., etc.
7. Renders *medical treatment* usually necessary.
8. Is liable to produce *deformities* whenever the disease proves severe; and to be
9. Followed by the diseases as above enumerated but less frequently.

INOCULATED COW-POX.

Not contagious; and when properly conducted *uniformly mild, inoffensive, free* from *pain* or *danger*, and an infallible *preventive* of the *small-pox.*

NEVER FATAL.

During a long series of years the *cow-pox* accidently received, has been considered as *a preservative* against any future attack of the *small-pox.* Many persons in the dairy countries, who have had the former in their youths, have remained to old age unsusceptible of the latter.

1. The inoculated cow-pox is attended by no *danger.*
2. Produces a *pustule* in the *inoculated part only.*
3. Occassions neither *confinement,*
4. *Loss of time,* nor,
5. *Expense;*
6. Demands no other *precautions* than such as respect the *conduct* of the *inoculated;*
7. Requires no medicine;
8. Leaves no *deformity* nor *disfiguration;*
9. Excites no *subsequent diseases.*

NATURE OF THE VIRUS OR CONTAGIUM OF COW-POX AND SMALL-POX.

The virus of cow-pox is not known to be communcaible otherwise than by direct contact or inoculation.

In this respect, therefore, it differs from its congeners, the *contagia* of small-pox and variolæ ovium, both of which are believed to be readily communicable through the air. Considering the very close analogies which

bsist between these three diseases, it has been held with reason that this ntrast may be due not so much to any intrinsic difference between con- gious particles by which they are respectively propagated, as to differ- ces in the amount of virulent matter generated in the infected organism, d in the facilities afforded for the distribution of this matter through the rrounding medium. Inasmuch as not one of the three contagia is vola- e, infection at a distance can only take place by the transfer of particles rived from the diseased individual to some absorbent surface in the althy one. Such absorbent surfaces are to be found in the mucous mem- nes lining the air passages and the alimentary canal. That the virulent tter is capable of being absorbed from the intestinal surface, and caus- g all the phenomena of constitutional infection, has been experimentally ved in the case of ovine variola; and the result may reasonably be ended to the two allied disorders.

Experiments with reference to the introduction of small-pox virus into system through the channel of the alimentary canal appear to have n made as early as 1792 (six years before Dr. Jenner published his In- ry on the *Variolæ Vaccinæ)*, as will be seen from the following tement:

ALL-POX COMMUNICATED TO MAN AND ANIMALS BY EAT- ING THE SMALL-POX MATTER, IN 1792.

hn Maisillæ gives the following facts, in the *Bulletin de la Societe Philomatique*, for ober and November, 1792:

A peasant of the County of Essex having a great many children carried off by the *viral* small-pox, was desirous of inoculating his two boys—one nine and the other ve years old. Not being able to employ a surgeon, he collected the scabs of a child sick of the disease, powdered them, and sprinkled the powder upon slices of bread butter. The two sons eat them, and gave a bit to the *house dog*. They had a mild l-pox, and got well without any remarkable accident. The dog remained sick for or three days, drinking a great deal and refusing to eat; on the fourth he had a very fied variolous eruption; on the ninth the pustules were full ripe and dried up, and off like those of the two children. An English author says he has observed the same emic in a flock of *sheep*, the greater part of which were affected, and communicated *two cows*, one of which died. The symptoms that manifested themselves in these als, in the course of the disease, were in every respect the same as are observed in uman species."—*The Medical Repository, vol.* 1, *Third Edition; New York*, 1804; *p.* 247.

hen we consider the number of distinct foci, each yielding a large unt of infective matter, distributed over the skin of a man affected small-pox, or of a sheep suffering from the severe form of ovine vari- when we recollect further, that similar infective foci exist elsewhere e body, as in the mouth, fauces and throat of man, and in the lungs of sheep, while secondary nodules full of virulent particles are often de- ped, in situations which enable their products to be discharged into surrounding medium by respiration and by coughing; we cannot but be k with the contrast between these two diseases and cow-pox as it oc- after inoculation in the human subject. The quantity of infective rial generated in cow-pox, though very considerable in relation to the unt introduced, falls very far short of the common supply yielded by a e case of ovine or human variola; and what there is, is generated in a tion which absolutely precludes its distribution throughout the envir- nt, at least during the period when the infection of the contagion is highest.

ce the difference between the communicability of vaccinia on the and and of small-pox on the other, admits of being thus easily

explained; it appears that the difference is one of degree only, and that deductions from experiments performed with the contagia of cow-pox may be extended to variola.*

Cow-pox and small-pox, whether inoculated or arising in the natural way, are attended during the active stage of the development and increment of the specific contagion, by febrile pyrexia.

The recognized characteristics of fever, are those which relate either to the disintegration of the living substance of the body, or to the increase and diminished constancy of the bodily temperature; but it is essential to the correct definition of fever that it should comprehend particulars relating to its origin, progress and termination; in other words fever is not merely a state but a process. Fever has its beginning in the entrance into or action on the organism of some affecting or infecting cause. After this event follows the period of latency; and it is not until it is passed that the first indications within the affected organism begin to manifest themselves. The state of fever once established, it may vary in its course, in its duration, and in the local inflammation which accompany it; but in all cases it has its onset, accession, and declension, each of which is characterized by more or less distinctive phenomena.

Two hypothesis have been framed as to the nature of fever, however excited.

One is that fever originates in disorder of the nervous centres, that by means of the influence of the nervous system on the systemic functions, the liberation of heat at the surface of the body is controlled or restrained, so that by *retention* the temperature rises, and finally that the increased temperature so produced acts on the living substance of the body so as to disorder its nutrition.

The other is, that fever originates in the living tissues, that it is from first to last a disorder of protoplasm, and that all the systemic disturbances are secondary.

In both hypotheses it is tacitly admitted that fever is the product of a *natural fever-producing cause* contained in the blood or tissue juice, the morbific action of which in the organization is antecedent to all functional disturbances whatever.

The first hypothesis must be rejected, because, on the one hand, no disorder of the systemic functions, or of the nervous centres which preside over them, is capable of inducing a state which can be identified with febrile pyrexia; and on the other, that it is possible for such a state to originate and persist in the organism after the influence of the central nervous system has been withdrawn from the tissues by the severance of the spinal cord.

It appears to be more rational to adopt the hypothesis of the tissue origin of fever†.

Dr. J. Burdon Sanderson (2) has shown by experimental investigations that whatever may be the nature of the poisonous agent, which produces septic fever and infective inflammations, it admits of complete removal by mechanical filtration. It is therefore material and particulate.

*Dr. Baxter's Report on an Experimental Study of Certain Disinfectants. Reports of the Medical Officer of the Privy Council and Local Government Board, New Series, vol. 6; London, 1876, p. 216.

†Dr. J. Burdon Sanderson on the Process of Fever. Public Health Reports of the Medical Officer of the Privy Council and Local Government Board; New Series, vol. 1, London, 1875, pp. 9, 40, 42, 47; vol. 2, 1876.

ICROSCOPICAL CHARACTERS OF VACCINE (COW-POX) LYMPH AND THE CONTAGIOUS MATTER FROM THE PUSTULES OF SMALL-POX.

There are a few contagious diseases in respect of which the presence in e contagious liquids of forms of vegetation differing from those met th either after death in the normal tissue or liquids of the body, or dur- ; life in the products of primary or secondary inflammations, has been ablished. These are small-pox, sheep-pox, splenic-fever and relapsing er.

The first statements as to the existence of organisms in the lymph of vpox was made by Dr. Keber,* of Dantzic, in 1868, who regarded them the carriers, if not the generators, of the active virulent principle.

In 1869, Dr. Burdon Sanderson† began a series of most valuable ætiologi- e researches in a new direction, and in his first paper on the pathology of tagion, published in 1870, he gave an account, accompanied by a wood of certain bodies to which he assigned the name of microzymes, the sence of which he found it was usually possible to demonstrate in vac- e liquid. Dr. Sanderson was not able, however, to assert that their pres- e was or was not essential to the infective activity of the virus.

In 1863, Dr. Lionel Beale described in a paper which appeared in the "croscopical Journal," for April, 1864, the existence of transparent hya- particles, of extreme minuteness, in vaccine lymph. These particles regarded as masses of living matter, or germinal matter. In a subse- nt research on the same subject, an account of which appeared in the ort of the Royal Commission on Cattle Plague, his previous results e confirmed. Both papers contain drawings of the particles. Since that e, vaccine lymph has been examined by many other skillful observers, of whom agree that the liquid, notwithstanding its apparent limpidity, ains minute particles. In the papers referred to, Dr. Beale expressed opinion that the contagious principle resided in the granules, but he not offer any experimental proof of its being so.

t this point the investigation was taken up by Dr. Chauveau, of Lyons, , without knowing of the observations of Dr. Lionel Beale, had also found vaccine lymph contains particles. Using the large field at his disposal, rofessor in the Government Veterinary School at Lyons, he has carried a number of experiments as to the physical character of infective liquids e communicable diseases of animals. His earliest researches were directed e relation between cow-pox and small-pox, and are contained in well wn reports on these diseases published at Lyons in 1865‡.

bsequently, M. Chauveau directed his attention to the question of the re of the contagious process in general, taking as his basis an inquiry the physical characters of vaccine.

ature vaccine lymph contains in suspension two kinds of particles. In irst place, bodies are generally met with analogous to pus corpuscles. do not differ from the corpuscles which occur in pus in an early stage rmation, as in the liquid of a blister when first becoming opalescent. besides those particles vaccine contains particles far inferior to them ze, not exceeding indeed 1-20,000 of an inch in diameter.

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er. Ueber die microscopischen Bestandtheile der Pocken—Lymphe. Virchows Archiv, vol. 42, p. 112

rts on recent researches on the Pathology of the Infective Processes, by J. Burdon Sanderson. ic Health Reports of the Medical Officer of the Privy Council and Local Government Board; New vol. 3. London, 1874, pp. 11-48.

oductory Report, by Dr. Burdon Sanderson, on the intimate Pathology of Contagion. Public Health. fth Report of the Medical Officer of the Privy Council, 1869; London, 1870, pp. 229-256.

ine et Variola, étude experimentale sur la question de l'identité de ces deux affections, Paris, 1865.

Starting from these facts, M Chauveau proceeded to inquire by experiment, in which of those three elements of which vaccine consists (viz., the leucocytes, the minute particles, and the clear liquid in which they float) the activity of the vaccine resides.

By careful experiments M. Chauveau (1) has proved that the leucocytes contain nothing essential to the activity of vaccine lymph; and also that the fluid portion freed from the minute particles although containing all the soluble constituents of vaccine, is wanting in those upon which its activity depends.

The experiments of Chauveau were perfected and repeated by Dr. Burdon Sanderson in 1869, and their accuracy was confirmed and the result established that the infective property of vaccine lymph, resides in the minute particles; although the proposition was not announced by Dr. Sanderson and Chauveau. About the same time Professor Klebs, (2) described the minute particles of vaccine in his handbook of Pathology(3).

Two years afterwards, Professor Ferdinand Cohn, (4) of Breslau treated of this subject. His observations relate both to vaccine and variolous lymph, and led to the interesting discovery that the organisms (minute particles) discovered in vaccine lymph by Lionel Beale, Chauveau, Klebs and Burdon Sanderson, are also found in the variolous lymph, and present characters so entirely similar, that it is not possible to draw any distinction between them, either as regards form or development.

According to Professor Ferdinand Cohn, vaccine and variolous lymph is always to be found filled with spheroidal particles or corpuscles, which, although they exhibit molecular motion, have no motion of their own. They are extremely small, and in their reaction on light differ little from the serum in which they are suspended, on which account they are easily overlooked. It is difficult to determine the diameter of the spheroids micrometrically, but Professor Cohn estimates it about three-quarters of a micromillimeter. In addition to these, numerous larger and more refractive bodies are found in the lymph, as regards which it is difficult to say whether they are fat globules or result from further development of the others. It seems most probable that they are cells, each of which consists of a dark central part, surrounded by a membrane indicated by a clearer ring, an appearance often seen in stages of division. In perfectly fresh preparations most of the corpuscles are simple, others being joined together in a form resembling the figure 8. After the preparation has been kept, the number of these double cells increases, and soon chains of four begin to be distinguishable.

These chains are usually curved or in zigzag; their attachment one to another is evidently very slight, as they can readily be displaced. After one or two hours, numerous necklaces present themselves, usually of eight joints, which are even more readily broken up than the others. In this displacement the groups are to be attributed; of these, some resemble sarcinæ, but it is to be observed that no true sarcinæ showing crucial division present themselves. Obviously the very rapid and uninterrupted multiplication of the spheroids takes place by a process of repeated transverse division, in which the septa are parallel, so that the resulting daughter cells are arranged in necklaces like the spores of a penicillium. In consequence of their very slight attachment to each other, it is only at the beginning that the original grouping, due to their mode of development, is

1 Détermination experimentale des éléments qui constituent le principe actif de la serosité vaccinale virulente. Comptes Rendus, LXVIII. 1868. p. 289.
2 Twelfth report of the medical officer of the Privy Council, London, 1870, p. 233.
3 Klebs, Handbuch des Pathologie, vol. 1, p. 40.
4 Cohn, Organismen in des Pockenlymphe Virchows Archir, vol. 55, p. 229.

hceable. After a few hours' observation they are sure to be all aggre-
ted into irregular colonies or clumps, each consisting of sixteen, thirty-
o, or more, corpuscles. The multiplication of cells lasts for several days,
e aggregations becoming larger and larger. In capillary glass tubes
e multiplication of colonies sometimes lasts a long time, so that they ac-
ire considerable size, and present themselves as flocculi. By the forma-
n of mucous-like interstitial substance the corpuscles become intimately
ited with each other, the mass being converted into zoogloea. When
s is the case, the size of the individual cells increases, their contents be-
ning more refractive, so as to resemble oil-drops. As these agglomerations
apt to be encrusted with other bodies derived from the lymph, the char-
ers which indicate their origin become indistinct. It often happens that
changes described are associated with the appearance of acicular crys-
s resembling raphides.

Some months before the appearance of the paper of Professor Cohn, taining the preceding facts with reference to the organisms of vaccine l variolous lymph, etc., Weigert,* of Breslau, published a short commu-ation founded on the microscopical examination of the skin in patients o had died of small-pox, in which he stated that he had found the lymph-s plugged with a granular mass which exhibited all the characters of rococci.

The fact that organisms of a particular form exist in the lymph of small-, taken in connection with the occurrence of similar organisms in the nnels of absorption leading from the pustules, suggest the probability otheir having to do with the morbid process.

During the small-pox of New Orleans of 1881, 1882 and 1883, I have eated the observations of Kohn and obtained similar results with re-nce to the spheroidal particles or corpuscles of vaccine and variolous ph.

MPARATIVE PHENOMENA OF INOCULATED SMALL-POX AND COW-POX.

INOCULATED SMALL-POX.

noculation is performed by introducing into the arm, at the insertion of deltoid, by means of a lancet, a minute portion of variolous matter. thin lymph of a fifth day vesicle is to be preferred to the well-con-ed purulent matter of the eighth day, but both are efficient. One incis only is to be made. A minute, orange-colored spot is perceptible by id of the microscope on the second day; on the third or fourth day, a ation of pricking is experienced in the part. The punctured point is , and a minute vesicle, whose centre is depressed, may be observed sur-nting an inflamed base. On the fifth day the vesicle is well developed the areola commences. On the sixth day the patient feels stiffness in axilla, with pain. The inoculated part has become a hard and inflamed gmon. The subjacent cellular membrane has become involved in the nmatory action. On the evening of the seventh, or early on the eighth rigors, headache, a fit of syncope, vomiting, an offensive state of the th, alternate heats and chills, langor, lassitude, or, in the child, an epi-paroxysm, announce the setting in of fever. The constitution has invaded by the operation of the contagium from the local disorder.

* gert uhu Baltinen in der Pockenhuut; Contralblatt, 1871, p. 609.

On the appearance of febrile symptoms, the inflammation of the arm spreads rapidly. An areola of irregular shape is soon completed, which displays within it minute confluent vesicles.

On the tenth day the arm is hard, terse, shining and very red. The pustule discharges copiously, and ulceration has evidently penetrated the whole depth of the corion.

On the eighth day spots of variolous eruptions show themselves in various and often in the most distant parts of the body. In a very large proportion of cases, the eruption is distinct and moderate. Sometimes not more than two or three papules can be discovered, which, perhaps, shrivel and dry up without going through the regular process of maturation. At other times the eruption is full and semi-confluent, passing through all the stages of maturation, and scabbing, and cicatrization, with as much perfection as the casual disease can display. Between these extremes every possible variety may be observed. The truly confluent eruption with affection of the mucous membrane is very rare, and that implication of the fluids and solids and of the nervous system, which together constitute the extreme of variolous malignity is nearly, if not entirely, unknown.

Secondary fever of any great intensity is not common.*

INOCULATED COW-POX—VACCINATION.

The symptoms which cow-pox manifests in the human subject resemble very closely those observed in the cow.

If vaccine lymph on the point of a lancet be inserted by puncture on the arm of an individual who has not been before vaccinated, nor has suffered with the small-pox, no particular local effect is noticed for the first two days; but at the end of the second or by the third day, a slight papular elevation is perceptible, which by the fifth or sixth day, has become a distinct vesicle of a bluish-white color with a raised edge, and a peculiar central, up-like depression. By the eighth day (the day week from the insertion of the lymph) this vesicle has attained its highest perfection, is plump, round, and more decidedly pearl-colored; the elevation of its margin and the depression of its centre, are more marked. At this date or a few hours earlier a ring of inflammation termed the areola, begins to form about its base, and for the next two days continues to spread. It is circular and, when fully developed, has a diameter of from one to three inches, and is often attended with considerable hardness and swelling of the subjacent connective tissue. The establishment of this areola, is the anatomical evidence that the cow-pox has produced its specific effects on the constitution. Other proofs of the constitutional influence of the vaccination are, its course, generally manifested in restlessness, heat of skin, with derangement of the stomach and bowels, and with, in some cases, swelling of the axillary glands.

These general symptoms, though seldom altogether absent, are often exceedingly slight.

After the tenth day the areola begins to fade, the vesicle begins to dry in the centre, the lymph remaining in it becomes opaque and concretes, and by the fourteenth or fifteenth day a hard, brown scab is formed, which contracts, dries, blackens, and from the twentieth to the twenty-fifth days falls off, leaving a cicatrix commonly permanent, and which in character is circular, somewhat depressed, foveated or indented with minute pits, and sometimes radiated.

*Lectures on the Eruptive Fever, by George Gregory, M. D., New York, 1851, pp. 108-110.

Occasionally certain constitutional symptoms beyond those already described are observed in young children of full habit, especially in hot weather, about the ninth or tenth day, when the areola is at its height, an eruption of roseola will sometimes take place, chiefly on the extremities; sometimes the eruption has a papular form (vaccine lichen), and sometimes is vesicular. These eruptions are generally very transitory; their ordinary duration does not extend beyond a week, and they very seldom last beyond the falling of the scab.

When lymph is employed that is derived directly, or say recently, as other three or four removes from the cow, the course of the disease is generally retarded at various stages. Papulation is sometimes deferred till the seventh, eighth, ninth or even the tenth day, and the areola is not completed till from the eleventh to the fourteenth, or even the sixteenth day. The areola, when at its height, is more indurated than is observed in vaccination with ordinary humanized lymph, and is said to decline and revive, continuing to exhibit a brick-red or purplish hue while the hardness remains.* The papular and vesicular eruptions which occasionally attend vaccination with humanized lymph, at this stage of its course, are more frequently seen. The vesicles themselves are commonly more developed than those produced by ordinary lymph. Desication is generally prolonged, and the crust is often retained till the fourth or fifth week.

Such are the ordinary phenomena induced by primary vaccination, in the human subject. The course however, is sometimes modified; and may be simply retarded, simply accelerated, or altogether irregular and spurious.†

The anatomical changes in the skin after the first vaccination clearly resemble those of variola. While fever never occurs at the commencement of vaccinia, the stage of maturation is always accompanied by a secondary fever. In incomplete, modified vaccina, the inflammation of the skin sometimes causes insupportable itching, sometimes tense or burning pain

From humerous measurements of temperature, Dr. Felix Von Wiemeyer,‡ satisfied himself that the patient has a fever which is not at all in proportion to the intensity and extent of the dermatitis. Where the local symptoms were very slight, Dr. Niemeyer has noticed a temperature of 104°. From the less extent of the dermatitis, the fever never becomes so high as in variola; it can only prove dangerous to very weakly children, and only in rare cases. It is rare also for dangerous erysipelas or pseudo-erysipelatous inflammation of the arm to occur during the stage of maturation.

PHENOMENA AND RELATIONS OF VARIOLA AND VARIOLOID—PHENOMENA OF VARIOLA (SMALL-POX).

It is not necessary to the present inquiry, that a minute description should be given of the varieties of small-pox, such as the UNMODIFIED; *confluent* (pustules running together over the greater part of the body; *semi-confluent; distinct* or *discrete* (all the pustules separate); *Petechial Haemorrhagic* (blood effused into the vesicle or pustules, with a tendency to haemorrhage from the mucous surfaces); *malignant, variola nigra, black small-pox, variola purpura; variola corymbosa.*

It is important that such facts should be recorded as illustrate the difference between cow-pox and small-pox on the one hand, and varicella (chicken-pox) on the other; and *also to determine, whether the modified*

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*ly; Observations on the Variolæ Vaccinæ. Transactions of Prov. Med. and Surg. Association. p. 346.

†ination by Edward Cator Seaton, M. D.

‡xt book of Practical Medicine, New York, 1869, vol. 2, p. 559.

small-pox (varioloid), in which the pustules are cut short in their development by vaccination or previous attacks of small-pox, presents decided differences in its thermometry and chemical pathology.

We have endeavored to present a comparative view of the appearances of the cow-pox in the human being and in the cow, and also of the discrete and confluent small-pox and of the modified small-pox (*varioloid*).

Plate 17, Figure 76, represents the variolæ vaccinæ. This drawing represents the hand of Sarah Nelmes, infected with the cow-pox from her master's cow, in May, 1796. Dr. Jenner states the pustule was so expressive of the true cow-pox, as it commonly appears upon the hand, that he had given a representation of it in Plate 1, of his "*Inquiry into the Causes and Effects of the Variolæ Vaccinæ*," Case 16, p. 31.

Plate 18, *VARIOLÆ VACCINÆ.—Figure 77, arm of John Baker, vaccinated March 16 1798 (Plate 2, case 18. Inquiry, Edward Jenner, p. 35); Figure 78, arm of William Pead (Plate 3, case 20, Inquiry, Edward Jenner, p. 38); Figure 79, arm of Hannah Excell (Plate 4, case 21, Inquiry into Variolæ Vaccinæ, Edward Jenner, p. 39).

Plate 19. COW-POX.—The *casual cow-pox* on the teat and udder of a black and white milch cow, after Dr. Ceely, of Aylesbury.

Plate 20, SMALL-POX (VARIOLA).—Figure 81, confluent small-pox; Figure 82, confluent small-pox; Figures 83, 84 and 85, small-pox pustules (discrete small-pox).

Plate 21, VARIOLOID and VARIOLA.—Figure 86, varioloid (modified small-pox); Figure 87 and 88 small-pox eruption; Figure 89, varioloid eruption; Figure 90, varioloid eruption.

It is important that the cases furnishing the Figures in Plates 20 and 21, should be examined somewhat in detail.

Plate 20, figure 81; portrait delineation of the confluent small-pox eruption* as it appeared on the TENTH DAY after it broke out on the face and hand of a female patient who was at the time of the disease in the small-pox ward of La Petié Hospital of Paris. She was twenty-five years of age, and had never been protected either by the cow-pox or the variolous disease.

She experienced all the common symptoms which generally attend this form of variola, and during the day on which the painting was executed she exhibited, in her features, the appearance of great anxiety and distress; the general swelling of the face, however, was not so great as often takes place in cases of the distinct variola, and the disease was one of moderate severity. Some of the pustules about the nose, mouth and chin had begun to dry up and look scaly.

After the TENTH DAY desiccation continued to progress, and on the FOURTEENTH DAY the eruption on the nose and the other parts of the face presented the appearance represented in figure 82, plate 20.†

From this date the disease pursued its usual course, and the patient, after five weeks of illness, was able to leave the ward, but her features were much deformed by the extensive ulceration caused by the eruption.

Figures 83, 84 and 85 represent the discrete and confluent small-pox eruption as it appeared at different periods on the face and hand of a girl aged fourteen. Figure 83, fifth day; figure 84, seventh day; figure 85, on the eleventh day of the eruption.‡

Plate 21, figure 86, represents a case of varioloid or modified variolous eruption of the distinct kind, as it appeared on the fourth day of its development. The female who was the subject of this eruption had been vaccinated when young, and the marks of the vaccination were visible on her arm. The scars were deep and smooth, and were supposed from their general appearance to be the results of a spurious disease. On the ninth of May, 1826, she experienced some unpleasant chills, which were accompanied with slight nausea. These were soon followed by flushes of heat, pains in the head, back and limbs, and by considerable, though moderate, fever. On the twelfth, and after three days of illness, a few pimples were discovered on her face and body. The pocks were in moderate number, and amounted, perhaps, to two or three hundred. They were most

*The paintings from which plates 20 and 21, figures 81 to 90, were engraved, were made in the Hospitals of Paris during the years 1825 and 1826, a period at which the variolous disease prevailed epidemically in that city. They were executed by a French artist, under the immediate direction of Dr. John D. Fisher of Boston, Massachusetts, and were all begun and finished at the bedside of the patients from whom they were taken. In making the drawings Dr. Fisher was careful to attend to a circumstance of some importance, in attempting an accurate and intelligible representation of the diseases intended to be illustrated by them; neither the severest nor the mildest cases were selected, but those of moderate severity, as it was thought that delineations of the maladies equally removed from the two extremes would be the best calculated to guide the inexperienced practitioner to a correct diagnosis. Dr. Fisher regarded the small-pox and the varioloid as one and the same disease, and that the chicken-pox is a *separate* and independent malady. Description of the Distinct Confluent and Inoculated Small-Pox, Varioloid Disease, Cow-Pox and Chicken Pox. Illustrated by thirteen plates. By John D. Fisher, M. D. Second Edition. Boston: 1837.

†Description of the Discrete, Confluent and Inoculated Small-Pox, Varioloid Disease, Cow Pox and Chicken-Pox. By John D. Fisher, M. D. Plate 5.

‡Small-pox, etc., J. D. Fisher, M. D., pp. 3-4.

Fig. 81: *Confluent Small-Pox.* *Fig.* 82: *Confluent Small-Pox.* *Figs.* 83, 84, *and* 85. *Small-Pox Pustules.*

Figure 81.

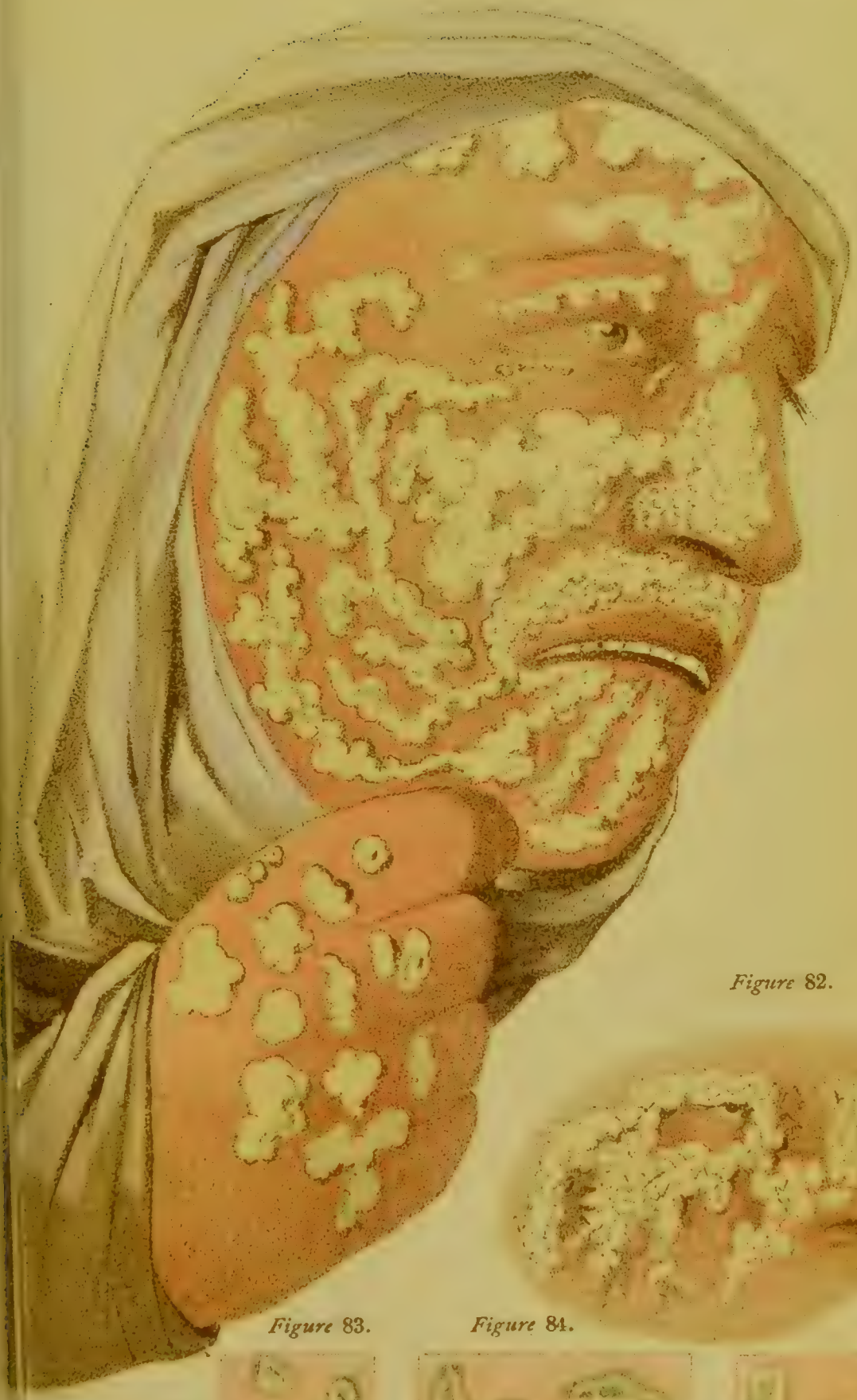


Figure 82.

Figure 83.



Figure 84.



Figure 85.



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umerous on the face than on the trunk and extremities. The pimples were papular at st, were hard to the touch and rather painful on pressure, and before the termina tion the second day the tops of them became vesicular. As they were converted into ves- les they increased in diameter and became more globular, but did not project far above e common surface. On the third day the pocks were all converted into vesicles, and re filled with a yellowish kind of serum. On the FOURTH DAY they had attained to e full size, and the eruption exhibited all the appearances represented in the portrait plate 21, figure 86. The bases of the pocks were still surrounded by bright-red areola, d were hard and tubucular to the finger The fluid contents of the eruption had grown llowish and more consistent, and the flattened surfaces of some of the pocks had be- ne slightly discolored. From the fourth day the pocks decreased a little in diameter, t diminished proportionately in elevation, and in a few instances they united and ran gether. The matter in them continued to grow thicker and more purulent in its char- er, and their tops, in consequence of the gradual coagulation or congretion of the us, assumed by degrees a dry and discolored appearance; and on the *sixth* day the ks had flattened considerably, and the inflamed areola surrounding them had dimin- ed in redness and breadth. From the *seventh* day desiccation proceeded rapidly, and the eighth the virus had concreted into a solid mass. In drying, the pocks were formed o reddish-brown crusts or scabs, and during this process they gradually became shriv- d and the scabs or crusts began to scale or crumble on the eighth or ninth day; and the *tenth day* most of the scabs had separated and fallen off, and left brown-colored ressions in the skin. These discolored depressions remained for some time, and were inguished by a tubucular hardness. They finally, however, disappeared, and left no es of the existence of the malady. The patient, through the whole course of the ase, suffered but little, and was not, for a single day, confined to her bed. The febrile ptoms subsided on the breaking out of the eruption, and did not afterwards reap- r. A swelling of the face and hands took place during maturation, but this went off oon as desiccation commenced.*

igures 89 and 90, Plate 21, represents varioloid pock, which appeared on a little girl years of age. Figure 89, second day of eruption. Figure 90, fourth day of eruption. s little girl had been vaccinated when an infant, and the vaccine scab was strongly ked on her left arm. She had been confined to the sick ward in the Hôpital des ans Malades of Paris in the summer of 1826, and whilst she was recovering from a ht fever, a girl fourteen years of age who occupied a bed near to the one she lay in, taken sick and broke out with the confluent small-pox. Just sixteen days from the osure of the little patient to this case of confluent small pox, about twenty pimples e discovered on different parts of her body. The eruption broke out without any or little previous illness, which would not have been noticed had it not been succeeded he eruption. A slight degree of langour, and a little dizziness and pain in the head, nded with a partial loss of appetite was all the symptoms that were observed. The tion first showed itself on the upper and inner part of the thigh, and was vesicular discovered. A few pimples were next seen on the face, trunk and hands, and were ular on their arrival at the surface, but before the termination of the first day their were converted into regular vesicles, containing a light straw-colored serum. On urth (Figure 90), they had gained their full size, and the matter which they contained n to concrete and dry up.

the sixth day the virus had completely dried up, and the surfaces of the pocks were ed with dry, light brown scabs. On the *eighth day* these scales or scabs had become r and of a darker color and began to crumble off. During the march of the erup- the patient suffered but little and experienced no secondary fever, and was as play- nd lively as usual. She remained during all this time in the ward in which she was sick, and continued to sleep in the same, notwithstanding the one next to it was ied by the girl who was sick with confluent variola. After the scabs had separated allen, purplish depressions or marks remained in the skin for some days, but then peared by degrees and in three weeks every vestige of the pocks had disappeared.†

ure 87 and Figure 88, contain an accurate copy of an eruption of the natural small- s it appeared on the hand and round the eye of a laborer on the SEVENTH DAY after ke out. The pustules were very numerous and were coherent and were piled upon ther, but were not confluent, and had passed into a state of suppuration. They erfectly round and varied in size in the different regions on which they existed. They uch larger and more globular on the hand than round the eye, as represented in the s. On the hands and feet the pustules were of the tubucular or warty kind, and d from those of the face and trunk, and from the more common eruption, in being ompact, harder and less prone to suppuration. Every part of the body of this pa- was nearly as thickly studded with the pustules, as the regions here represented, e eyes even were invaded by the eruption, and the sight of one of them, as shown ure 87, was destroyed by a pustule which appeared over the pupil.‡

-pox, etc., John D. Fisher, M. D., p. 35.
-pox, Fisher p. 37.
-pox, etc., by John D. Fisher, M. D., Boston, 1834, p. 42.

VARIOLA MALIGNA—VARIOLA HÆMORRHAGICA.

This fatal variety of small-pox was called by the early writers Variola Nigræ. The blood appears to be poisoned from the first by the disease being rendered florid and watery. When drawn from a vein a large part of it will be found to be serum, and what ought to be the crasamentum remains almost fluid; it is principally coloring matter; the fibrin seems to have disappeared. The countenance of the patient is sunken, the breathing anxious, and in some instances death takes place before the eruption has been developed, leaving it doubtful whether the disease was small-pox, scarlet-fever, or some other form of idiopathic malignant fever. The eruption is rather slowly developed. There is hemorrhage from some, and occasionally from all, or nearly all, of the mucous surfaces; from the nose, from the mouth, from the air passages, from the bowels, from the uterus and vagina. In the female there is invariably hemorrhage from the uterus and abortion in cases of pregnancy, and the fœtus is usually born dead. Hemorrhage frequently occurs from the kidneys, and the urine is loaded with blood. Albumen with granular casts may appear in non-malignant cases of small-pox, but the presence of blood in the urine of this disease must be regarded as a symptom of the most serious import.

A patch of effused blood under the conjunctiva, appearing early in the attack, should always be looked upon as a most dangerous symptom. In some instances blood oozes from the ears and eyes. Livid patches from effused blood are formed on the surface of the body, and blood is mixed with the fluid formed in the small-pox vesicles which can scarcely be said to become pustules. There is great depression, but the intellect usually remains clear to the last without delirium. A confluent eruption generally accompanies the malignant form of small-pox, and death commonly takes place on the fifth day of the eruption.

Petechial small-pox presents very nearly the same characters as malignant small-pox; the condition of the blood is very much the same in these two varieties of the disease. In Petechial small-pox numerous little dark spots, resembling flea-bites, especially about the arm-pits and groins, are observable, and the skin in these parts has a greenish-yellow hue, very like what is seen around a severe bruise.

DEVELOPMENT AND STRUCTURE OF THE SMALL-POX PUSTULE.

The eruption or formation of the small-pox pustule has certain definite stages in its development; it runs a given course of about eleven days, and its progress undergoes many mutations; it is at first a papule, then a vesicle, then a pustule, and lastly it forms a scab or crust. The various changes form so many *stadia* of unequal duration.

The first or stage of *papule*, lasts from *twenty-four to twenty-eight hours.*

The second or *vesicular* stage lasts *four days.*

The *last* stage, or that of *scabbing*, lasts *three days more*, making the whole duration of the *normal* pustule ten or eleven days.

There are varieties, however, of small-pox, in which the formation of the pustule is irregular, as in the Hemorrhagic, confluent and horne small-pox. In the horne small-pox the two last stages are singularly shortened or absent altogether.

When the eruption of small-pox is of the *distinct variety*, its first appearance consists of a number of small red papules, about the size of a pin's head, more or less numerous, but separate and distinct from one another

Figure 86.

Fig. 86.: *Varioloid.* *Fig.* 87.: *Small-Pox eruption.* *Fig.* 88.: *Small-Pox eruption.* *Fig.* 89.: *Varioloid eruption.* *Fig.* 90.: *Varioloid eruption.*

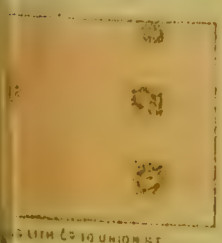


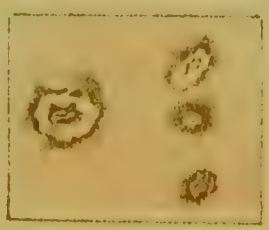
ure 87.

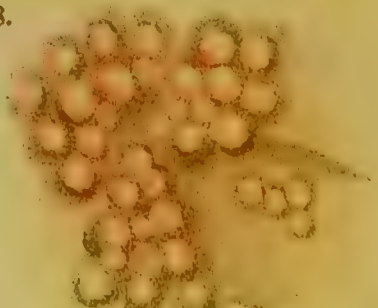
Figure 89.

Figure 90.

Figure 88.







a scarcely salient. They commence with a circumscribed hyperaemia of t true skin, extending into the subcutaneous tissue. The cells of the *Malpighii* swell up the papillae elongate, and the red spot of skin be- es a sharply-defined nodule, perfectly solid, and having a flattened top. n the second or third day of the eruption, the second stage towards the d elopment of pustules commences. A small vesicle, which gradually rges, bound down and depressed in the centre, or *umbilicated*, forms on t apex of each pimple, by elevation of the outer layer of the epidermis, a contains a clear whey-colored fluid. This vesicular stage lasts almost f days, when the vesicle maturates or "ripens" into a pustule. This p ess is so gradual, that if the pustule be examined closely about the fi or sixth day, a central whitish disc of lymph may be seen, set in or s ounded by a circle of yellowish, puriform matter. According to the te imony of Watson and others, there is in the centre a *vesicle*, which is d inct from the pus, so that you may puncture the vesicular portion and e ty the contents without letting out any of the pus; or you may punc- t the part containing the pus, and let that out without evacuating the c ents of the vesicle. The vesicles have even, by careful dissection, been t n out entire. The pus cells form from the *young* cells of the *Rete Mal- pii*. The adherence of the altered cuticle to the cutis at some points, a its separation at others, produces the little compartments or dissepi- m ts spoken of by some writers. These cavities are usually irregular in sh e, and contain a white substance of the consistence of pulp or thick m ous, which at first was supposed to be the specific exudation of small- p It is now ascertained that it is no pseudo-membrane, but is composed o he deeper and softened layers of the epidermis. This "*disc*" of soft- e l epidermis covers the interior of the pustule, and extends from the c re to the raised circumference of the pustule in diverging rays, form- i part of six or eight fan-like chambers of nearly equal size. In the st cture of this disc the following elements are distinguishable from w out inwards: (1), large flat cells; (2), large cells not so flat, but more gr ular and mucous; (3), nearest the cutis are the cells and tissue of the *re mucosum*. (Gruby, Gluge, Rayer, Gustav Simon, and other observers an systematic writers, as William Aitken.)

ne variolous pock has been carefully examined with a view of describ- in ts structure, by John Hunter, Dr. Adams, Petzholdt, Erasmus Wil- so Dr. Gustav Simon, Sir Thomas Watson, Dr. Heming, and others; but it ould be foreign to our purpose to present an extended view of the op ions of these various writers, and the above concise statements of the co ition of our knowledge on this subject will be still further illustrated by ne following description, by Carl Wedl, in his *Rudiments of Pathologi- ca Histology*.*

"xternal integuments—exudations in this situation, are particularly fitted for study, he accessible to observation, even during life. The most frequent are those which ta place in the cutaneous *papillæ*, in which they are either confined to small limited di cts, in which the exudation takes place around isolated groups of papillæ, or are m extensive. An instance of the former kind, or of a limited exudation, is afforded in all-pox, in which the spots are at first filled with a limpid fluid, containing nothing br olecules, and do not become pustules till afterwards, when pus-corpuscles are de- ve ed in the hyaline exudation. The transudation takes place from the capillary sys- to f the *papillæ*, the exudation as it is poured out gradually accumulating between the ur surface of the *epidermis* and the upper surface of the *corium*. But since the pro- ce s confined to limited groups of *papillæ*, the epidermis covering the latter is raised in th rm of a transparent vesicle, while the spot at which the hair escapes from its sheath, to her with the excretory duct of the sebaceous follicle, remains depressed, and con- sti es the central *pit* of the vesicle. In those parts of the skin where no hair or seba-

* nslated by George Busk, F. R. S.; Sydenham Society, p. 206.

ceous follicles exist, as in the palm of the hand and sole of the foot, the exudation deposited around a point where several of the deeper grooves in the *corium*, meet, may cause a similar pit, since in a situation of this kind the *epidermis* constitutes a stronger layer and is of closer texture. When the puriform fluid in the pustules begin to dry up, the pit becomes shallower and wider, owing to the subsidence of the swelling. In the integuments of a subject dead of small-pox, it is easy to perceive that the vessels of the *papillæ* are more or less injected, when the skin has been macerated long enough to allow of the removal of the *epidermis*, beneath which the isolated patches of vascular injection are immediately apparent. Perpendicular sections show that the *papillæ* are the constant and principal seat of the injection, and it is from these vessels that the hemorrhage takes place, in cases of petechial small-pox."

The poison of small-pox is believed to be most active just at the period when the clear contents of the vesicles begin to turn cloudy. While the maturation of the vesicle, into a pustule is going on, a damask red areola forms around each pustule; and as the vesicle fills, the whole face swells, and often to so great a degree that the eyelids are closed. When the eruption is completed the "bridle" which bound down the centre of the vesicle ruptures, and the pustule now becomes *spheroidal* or *accuminated*. About the eighth day of the eruption a dark spot is seen on the top of each pustule. At that spot the cuticle ruptures, allowing matter to exude, which concretes into a scab or crust; and during this process the pustule shrivels and dries up. The crust is detached between the eleventh and fourteenth days, leaving the cutis beneath of a dark reddish brown hue, a discoloration which lasts many days, or even weeks. On the face, however, the pustule often penetrates or burrows, so as to cause ulceration of the *rete mucosum*, leaving a permanent cicatrix in the form of a depression or "pit." The cicatrix thus formed, though at first of a dark reddish brown, ultimately becomes of a dead white color.

The small-pox eruption does not appear on the whole body at once, but appears in three successive crops. The first crop covers the face, neck and upper extremities; the second the trunk, while the third appears on the lower extremities. There is usually an interval of several hours between each crop; and the later the papules are in appearing on the trunk and lower extremities than on the face and neck, by so much the later they are in maturing and disappearing from these parts. When the eruption on the face is declining, that upon the extremities has scarcely yet arrived at its height, so that the hands and feet are then considerably swollen. This is to be regarded as a favorable sign, in so far as it indicates a certain sign of constitution.

The number of pustules sometimes does not exceed five or six over the whole body; more commonly they number from one to 300, and occasionally amount to several thousands. It has been calculated that if 10,000 pustules be counted on the body that 2000, at least, will be found on the face; and accordingly the number of the pustules on the face being in proportion, those on the other parts of the body furnish a fair estimate of the extent of the disease and of the danger of the patient.*

CHANGES OF THE TEMPERATURE AND URINE IN SMALL-POX (VARIOLA) AND IN MODIFIED SMALL-POX VARIOLOID.

The following observations and chemical researches were made by the author, chiefly during the recent Civil War (1861-1865), when the camp life permitted isolation and continuous labor, without the interruption attending private practice.

* The Science and Practice of Medicine. By William Aitken, M. D., Edinb., Prof. of Pathology in the Army Medical School, Philadelphia, 1872. Vol. 1, pp. 376-378.

CHANGES OF TEMPERATURE IN SMALL-POX.

The fever of this disease, as well as that of measles, scarlatina, typhus nd typhoid fevers, in like manner with those of hospital gangrene and rgical fever, is due to the contamination of the blood by a specific organic oison.

The matinal producing small-pox being definitely related chemically and hysiologically to the organic constituents of the living body, the evelopment of the disease is traceable through well marked stages.

During the period of incubation (the duration of which varies within arrow limits, according as the poison has been introduced by the mucous cutaneous tissues, in the former case, or natural small-pox, the period latency varying from ten to fifteen days, and in the small–pox produced inoculation, from seven to nine days), the specific poison absorbed radually infects the blood, rendering it contagious in its properties, and citant and irritant to the nervous system and circulatory apparatus.

The infection and alteration of the blood during the period of inocula on in small-pox gives rise to the secondary stage of primary fever, last- g from two to six days, till the eruption appears, when, in most cases, it mits. This stage is characterized by fever, the temperature of the axilla sing to 106° F. and even higher; severe muscular pains, especially in the nall of the back; nausea and in some cases obstinate vomiting, oppres- on of the brain, drowsiness, stupor and even coma, and occasionally con- ulsions.

During the fever and prior to the appearance of the eruption, the in- nse pain in the back is a symptom of great importance as giving a warn- g as to the character of the disease. The pain in the back is a peculiar d striking symptom, and is more intense than in any other form of fever. is distinguished from lumbago by its position; that in lumbago affects e muscles on each side of the spine, and is greatly aggravated by move- ent; while the pain of the back in small-pox is in the central part of the *crum* and the lumbar region, and is not influenced by movement.

During a series of investigations and post-mortems on small-pox in 64, I suffered with all the symptoms of the first stages of this disease, and perienced the most intense pain in the back; this pain was even greater an that which I suffered subsequently in 1873 from dangue, and in 1878 om yellow fever.

Three views have been advanced, as to the source of this characteristic in in small-pox.

(1.) Hyperæmia of the spinal medulla.

(2.) Pressure on spinal nerves as they emerge from the *lumbar* and *sacral* gions by the distended venous plexus surrounding them in the bony out- s.

(3.) Excessive hyperæmia of the kidney, or incipient nephritis in the nective tissues of the kidney.

In severe cases of small-pox I have detected albumen and urinary casts the urine, and the pain may, in some degree, be due to hyperæmia of se organs, but is most probably referable to congestion of the spinal d.

On the evening of third or morning of the fourth day, after the com- ncing of chill, the fever is usually at its height; and on the fourth day, metimes sooner and but seldom later, the eruption appears, and the rd stage commences, the phenomena of the third stage are as a calm ceeding to a storm; for on the appearance of the eruption, the fever re- ts, the heat abates, the affection of the head subsides, the vomiting

ceases, and the pulse returns to its natural standard. The febrile phenomena seem to have altogether disappeared for the time, and the patient may think himself well. A temporary defervescence is thus well marked, the temperature falling from, perhaps, 106° F. progressively downward to 100° F.

On the first or second day of the disease the temperature may attain a considerable height, seldom below 40°c (104°F.), and more often above it; and this rise may occur in an unbroken line and with extreme rapidity, or it may occur more slowly and reach the elevation on the second evening. On the second day the temperature may have already attained its maximum, or may still exhibit a moderate increase on the third or on the fourth day, with which only very slight remissions occur in the morning hours.

According to Dr. C. A. Wunderlich :*

"The *maximum* temperature of the initial stage or prodromal fever is only exceptionally less than 40°c (104°F.), generally somewhat above that, sometimes even 41°c (105.8°F.), or indeed a few tenths more.

"When the maximum has been reached a slight fall immediately ensues, which generally lasts only one day. At this time we may commonly notice the first traces of the eruption in the form of spots. This stage lasts from two to five days, and it is not possible at this time, from the course of the temperature, to discriminate small-pox from exanthematus typhus, relapsing fever, or from a pneumonia which as yet affords no local evidence of its presence; and even when the other symptoms are taken in conjunction, it is seldom that we can speak with complete certainty. Yet, on the one hand, every day that the fever lasts, without the lung symptoms render pneumonia less probable; and, on the other hand, if the fifth day of the disease pass over without any eruption making its appearance, the presence of small-pox must be considered very doubtful.

"Soon after the first development of the variolous papules, *the temperature falls more or less rapidly.* In rare cases of the disease this defervescence occurs as early as the second or third day of the disease, but generally from the fourth to the seventh day. The downfall lasts only twenty-four hours or less, in which case it is continuous; or two, or, indeed, even three days, when it is generally not continuous, or, in other words, it is interrupted by a moderate evening exacubation. * * *

"The falling temperature after the prodromal stage either never gets down to normal, sometimes remaining sub-febrile, but generally at decided febrile degrees, and continuing in this fashion for several days, with or without daily fluctuations; or the normal temperature is reached, if at all, tediously, and defervescence is by lysis."

About the fourth day of the eruption, and about the eighth day of the disease, inclusive, from the first attack of the primary fever, when the eruption is fully out, and the most advanced pustules commence to maturate, the commencement of suppuration is announced by the swelling of the integument, and especially of the whole face, head and neck. During this period of intumescence (generally lasting three days), simultaneously with the renewed hyperæmia of the skin, and introductory to the change taking place in the cavity of the pustules, the fever, which had remitted, returns, and the last stage, or that of secondary or suppurative fever, commences. In rare cases of extraordinary interest, this stage is marked by a rise of temperature to a considerable height (104°, 105°, and even in the case of Colonel Nat. Offut, my hospital student, to 111°c,) by acceleration of the circulation, and by slight delirium and rigors. In cases of greater intensity, severe delirium, a harsh, dry, cough, and hemorrhages from the kidneys and lungs and bowels may be added to the other symptoms.

In many cases the secondary fever, and the swelling and redness of the face, having lasted from three to five days, subside, and the now fully ripe pustules burst and discharge a thin, yellow matter, which concreting into a crust, falls off on the fourteenth or fifteenth day, and the disease terminates. During these changes the secondary fever of small-pox disappears, and the temperature sinks gradually to the normal standard.

*On the Temperature in Disease; Sydenham Society; London, 1871; p. 339.

The secondary fever of small-pox is clearly related to the suppurative process, nd without doubt has much the same origin as uncomplicated inflammatory ver accompanying mechanical injury or amputation, or suppurative inflam- ation of some important organ. It is mainly due to the absorption of the rum of the pus, and of the products of the inflammatory exudations.

In many cases the secondary (suppurating) fever is of indefinite dura- on, varying in accordance with the intensity of the disease; and at the me time its course and the height of the temperature differ according to e danger and severity of the disease. In small-pox of moderate severity e temperature in this stage scarcely reaches 39°c (102.2° F.) in general, d very rarely 40°c (104°F.) or more; there are morning remissions, and e duration is usually only a few days. In some cases the temperature is nsiderably higher; the course is sometimes remittent, with very marked acerbations, and sometimes continuous with occasional isolated elevations temperature.

Irregular fluctuations very often mark its course. If, during the fever suppuration, the temperature several times exceeds 40°c (104°F.), it is a n of great danger. In cases not fatal the duration of the secondary er is seldom less than a week.

In favorable cases the fever depresses by lysis, in a very gradual man- , and sometimes at the time of scabbing, there is an occasional preju- ial but brief rise of temperature, or the fever may even continue till siccation, and it may even be longer.

n *fatal* cases, the temperature may rise rather quickly from mod- te heights to very considerable degrees, and death may occur at 42° c. (7.6° F.), or even more, although during this stage the patient may die h only moderate elevation of temperature. Simon (*Charité Annative, Bd. 5)* has published cases in which the temperature (which was, how- r, measured after death) was 43.75° and 44.5° c., respectively, (110.75° 112.1°).

erious complications may cause intercurrent attacks and irregularities he temperature, which, however, presents nothing specially character- of small-pox.*

CHANGES OF THE TEMPERATURE IN VARIOLOID OR MODIFIED SMALL-POX (SMALL-POX AFTER VACCINATION).

nall-pox as modified by vaccination, received the name of VARIOLOID, suggested for it by Dr. John Thompson, of Edinburgh, who wrote a k on the subject in 1820; and this word has been adopted generally in ope and America by writers on small-pox.

nall-pox after vaccination presents various degrees of severity, and ification, from the slightest form of which there is none, or hardly eruption at all, to the most confluent cases, closely, often exactly mbling the disease in the unvaccinated; and it also assumes the chial and malignant types after vaccination just as in the unvac- ted state. This depends in a large measure upon:

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estigations upon the Nature, Causes, and Treatment of Hospital Gangrene, as it prevailed in the erate Armies, 1861-1865; by Joseph Jones, M. D. Surgical Memoirs United States Sanitary Com- ; New York, 1871, pp. 355–361.

. Wunderlich; Archiv fur physiol. Heilkunde, N. F. 2, 18, 1858. Leo; Archiv der Heilkunde, 4, 4; Frohlich, ibid, 1867, v. 8, 420; Korber, Petersb. Zeitschrift, 13, 303. On the Temperature in Dis- a Manual of Medical Thermometry, by Dr. C. A. Wunderlich, New Sydenham Society; 1871, –341. Table 4. The Science and Practice of Medicine, by William Aitkin; Philadelphia, 1872, vol. 1, –398.

1. The matter with which the patient has been vaccinated.
2. The mode in which the vaccination has been performed.
3. The length of time which has elapsed since the performance of the vaccination.
4. The state of the constitution of the patient at the time of the eruption of the variolous poison.

Dr. J. F. Marson, Resident Surgeon to the London Small-Pox Hospital, has published the following valuable table, illustrating the effects of the mode of vaccination upon the subsequent attacks of small-pox (varioloid):

TABLE.

Analysis of all the Cases of Small-pox after Vaccination, admitted at the Small-pox and Vaccination Hospital, London, for a period of twenty years, viz: from 1836 *to* 1855, *inclusive, showing, from a careful examination of the Cicatrices, the relative amount of security given by the number of Vesicles produced at Vaccination; and, judging from the character of the Cicatrices, the probable state of activity and efficiency of Lymph used after Vaccination.*

PATIENTS ADMITTED WITH SMALL-POX.	Number of Patients	Character of Cicatrices.	Cases.	RESULTS. Discharged.	Died.	Died Affected by Superadded Diseases.	Ratio per cent of Mortality from Small-Pox after deducting entirely Cases affected by Superadded Diseases.	
1. Having one vaccine cicatrix	2,001	Good.	1,032	978	54	15	3.83	7.73
		Indifferent.	969	835	134	21	11.91	
2. Having two vaccine cicatrices	1,446	Good.	873	841	32	12	2 32	4.70
		Indifferent.	573	516	57	10	8.34	
3. Having three or more vaccine cicatrices	518	Good.	307	300	7	4	0.99	1.95
		Indifferent.	211	202	9	2	3.34	
4. Having four or more vaccine cicatrices	544	Good.	356	356	2	0	0.55	0.55
		Indifferent.	180	183	3	2	0.54	
5. Stated to have been vaccinated but having no cicatrix	370	.....	370	269	101	18		23.57
5. Stated to have been vaccinated but particulars of cicatrix not recorded	17	.....	17	14	3	.....		6.66
Total	4,896	.....	4,896	4,494	402	86		6.56

Dr. Marson describes a good vaccine cicatrix as distinct, foveated, dotted, or indented, in some instances radiated, and having a well, or tolerably well-defined edge; an indifferent cicatrix is indistinct, smooth, without indentation, and with an irregular, well-defined edge.

According to the preceding statistics, and in accordance with the valuable experience of Dr. Marson, the aggregate mortality with *good* vaccine cicatrices, from small-pox alone, uninfluenced by other diseases, is 2.25 per cent.; with *indifferent* vaccine cicatrices, from small-pox alone, uninfluenced by other diseases, 8.82 per cent.

There is found to be a mortality of about two per cent. in vaccinated as well as unvaccinated patients from small-pox, being complicated with antecedent or superadded diseases.

Three-fourths of the cases had taken the vaccination in but one or two places, and among these, by far the largest proportionate mortality from small-pox has fallen. By vaccinating so as to take effect in four or more places, we not only save life, but prevent a great deal of suffering and subsequent damage to the appearance of the person, which, in females at least, is of great consequence, and not always quite a matter of indifference to males.

Of 544 cases having four or more vaccine cicatrices, not one-half of one r cent. died of small-pox, or one in 200; whereas of 969 cases, with only e indifferent vaccine cicatrix, almost twelve per cent. died.

Of 370 persons who believed themselves vaccinated, but who had no cic- rix to show for having been vaccinated, but who trusted to it for their otection, died of small-pox at the rate of twenty-three and one-half per nt.

The security of vaccinated persons gradually rises, not only from the mber of cicatrices produced at vaccination, but also according to the *ality* of the cicatrices. Active vaccine lymph, such as leaves clear, per- nent cicatrices, is evidently indicated as the most desirable to select for e in vaccination.

According to Dr. J. F. Marson, "In the course of years vaccine lymph comes humanized, by passing many times through the subject, and can ly be kept in a great state of efficiency by having many subjects con- ntly to select from for its continuance, and even then the cicatrices it ves, after many years' use, are not so good as they were formerly.

"Out of large numbers of cases of small-pox after vaccination, viz., 58, admitted into the Small-pox Hospital during the years 1863 and '64— all-pox having been epidemic in London throughout these entire years— e mortality shows a considerable increase, by from 6.56 per cent. for enty years—1836 to 1855—to a mortality of 9.2 per cent. out of 1,958 ses for the years 1863 and '64; all patients manifesting antecedent or pervening diseases having been deducted from the calculation.

"It is a question that may be fairly and properly entertained, and de- ves very mature deliberation, whether we ought not to resort more fre- ently than has hitherto been done to supplies of lymph from the cow."*

Modified small-pox, or varioloid, is characterized by the comparative ildness of the symptoms, the pustules being cut short in their develop- nt by vaccination or a primary attack of small-pox.

The principal varieties of modified small-pox (varioloid) have been thus ssified by systematic nosologists:

. A fever of three days, without eruption, affecting people during va- ous epidemics *(variolae sine variolis vel eruptione).*

. A high and severe fever, followed by a very mild eruption, sometimes y a single pock; the slight proportion which the amount of eruption rs to the severity of the preceding fever is perhaps the most marked racteristic of varioloid.

. The occasional appearance of a scarlet efflorescence, like that of rlatina or roseola, preceding the appearance of the proper pimples, ich occur as a very scanty crop.

. In some rare instances the eruption is confluent, but does not advance ond the development of a pimple or vesicle, and begins to dry on the rth or fifth day of the eruption, forming a small, hard tubercle, which n disappears.

. Sometimes the eruption is pimple, vesicle and pustule at one time in same case.

. Sometimes the eruption runs its regular course, but stops sooner, metimes on the sixth or seventh day, instead of the eighth or ninth. In neral, it may be stated that the severity and fully developed state of the ase is in proportion to the length of time which elapses from vaccination.

* Small-pox, J. F. Marson; System of Medicine, by J. Russell Reynolds; Philadelphia, 1879; vol. 1, pp. and 154.

7. The varioloid eruption wants the peculiar odor of natural small-pox, and secondary fever is very rare.*

It may be stated in general terms that in varioloid, after an intense continuous fever, lasting a few days, a final exacerbation terminates the fever suddenly and simultaneously, with the development of the small-pox pimples. A rapid and perfect defervescence then ensues, the temperature decreasing seven or more degrees, Fahr., within thirty-six hours. From this event the patient remains entirely free from fever—*provided there exists no serious complication*—in spite of the continuous and progressive development of the small-pox pimples into pustules, and even in spite of the successive eruption of new pimples.

It is evident, therefore, that the fever in small-pox exhibits *two distinct types*, which closely correspond at their commencement.

These two types correspond to the two chief modifications of small-pox; one a brief *continuous* form, belonging to modified small-pox or *varioloid*, occurring chiefly, although not exclusively, in vaccinated or inoculated persons; the other a *relapsing* type, which characterizes the *unmodified small-pox (variola vera)*, which runs its course with fever in the suppurating stage.

The course of the temperature in the initial stage will not suffice to distinguish between *true variola and varioloid*, but as soon as the exanthem develops itself the course of the temperature is not only the most certain, but the only certain, criterion by which true small-pox may be distinguished from the modified form. Not only in the occurrence of a more or less developed secondary or suppurative fever the most trustworthy means of diagnosis between the two fevers, but the mode of defervescence of the eruptive fever gives an almost infallible indication as to the kind of further course of the disease.

The initial period is common to both types *(variola* and *varioloid)*. In the first or second days of the disease the temperature attains a considerable height, seldom below and often above 104° F.; the maximum temperature of the initial stage or prodromial fever reaching in many cases, and even exceeding, 106° F.

Soon after the first development of the variolous papules *the temperature falls more or less rapidly.*

In cases of uncomplicated *varioloid* the temperature quickly reaches by this defervescence, or falls down a trifle below it, and thenceforth remains normal or pretty nearly so, unless the occurrence of some complication causes a fresh rise, which is but seldom the case.

When the eruption in modified small-pox *(varioloid)* is very copious there may sometimes occur a slight (scarcely febrile) and seldom febrile elevation of temperature at the time when the pustules are desiccating, but this does not last long in any case.

This fall of temperature is the best characteristic of *varioloid*, especially when regard is had to the fact that the defervesence is not simultaneous with the full development of the eruption, but occurs soon after that begins, even at the time the spots begin to be papular, or to be distinctly felt as elevations.

CONSTITUTION AND CHANGES OF THE URINE IN VARIOLOID (MODIFIED SMALL-POX), AND IN VARIOLA VERA (SMALL-POX).

The urine of small-pox presents changes corresponding, to a certain extent, with the four well marked stages of the disease.

*Science and Practice of Medicine, by William Aitken, M. D.; Edinburgh; Philadelphia, 1872; vol 1, p. 388.

In this disease, the urinary excretion presents uniform characteristics; mely, great concentration, increase of the urea and uric acid, phosphoric d, and sulphuric acids, and diminution and even total disappearance the chloride of sodium.

The urine of modified small-pox *(varioloid)*, slso presents marked differ- es from that of true uncomplicated small-pox.

The table contains a consolidated statement of the results of the author's ors upon the changes of the urine in varioloid and variola during the il war (1861-1862*)*.

TABLE OF OBSERVATIONS UPON THE PHYSICAL AND CHEMICAL PROPERTIES, AND CONSTITUTION OF THE URINE IN SMALL-POX—BY JOSEPH JONES, M. D., SURGEON PROVISIONAL ARMY OF THE CONFEDERATE STATES.

Name of Patient, History of Disease, etc.	Date.	Physical Properties and Chemical Constituenss of Urine.								
		Amount of Urine collected during 24 Hours, Grains.	Specific Gravity.	Color.	Urea excreted during 24 hours, Grains.	Uric Acid, Grains.	Free Acid Grains.	Grains, Phosphoric Acid.	Grains. Sulphuric Acid.	Chlorides, Grains.
Varioloid.—Light Case.—J. J. Cobb, private, C. S A. Age 31. Oct. 31, 1864. Variolous eruption very slight; pustules small and few, and the patient walks about; appetite pretty good. The first symptoms made their appearance about five days ago. Pain in head, limbs, and back, with fever. Eruption first noticed Oct. 30. Nov. 1. Pustules increasing somewhat in size, but still small; patient dressed and walking about; eruption so slight that the character of the disease might escape observation; heavy deposit of urates in urine. Nov. 4. Pustules disappearing; they aborted.	Oct. 31, 1 P. M. to Nov. 1, 1 P. M.	5,865	1,029	Deep orange red	227.89	7.22	16.77	15.51	41.63	Trace
	Nov. 5	13,424	1,015–5	Orange yellow	239.93	8.00	14.22	15.57	48.74	38.80
Case of Well-Marked Varioloid.—Severer than the preceding, and approaching more nearly to distinct small-pox. Pustules large, well-formed, but scattering. W. B. Aiken, Company A, 30th Regiment, Georgia Vols Age, 30. Had headache, and pain in back and limbs, Oct. 24, 1864. Two days after on the 26th, the eruption made its appearance. Oct. 31. Pustules sparsely scattered over the face, but large and well filled. Patient up and about; appetite rather poor; complains of sore throat. Nov. 1. Pustules still in process of formation; heavy deposit of urates in urine. Nov. 4, eight and a half A. M. Pustules large and distinct, fully formed, and drying. Patient, as before, up and dressed and walking about; has taken a dose of Epsom salts.	Nov. 1	7,325.7	1,028.5	Orange red	222.33	10.85	28.30	26.98	24.73	14.14
	4	8,146.9	1,036.5	Light orange	260.53	10.80	38.01	27.79	88.52	10.32
Case of Small-Pox.—Austin, negro man. Oct. 25, 1864. Eruption appearing. Oct. 28. Eruption three days out; patient has cough; pulse but little above healthy standard, 88 per minute. Tongue very slightly coated; appears to be doing well; confined to bed. Oct. 29. Progresses favorably; pulse, 88; pustules distinct, and comparatively few; urine high-colored and concentrated, with heavy deposit of urates. Oct. 31. Patient doing well; tongue only slightly coated; voice hoarse; pustules forming well; heavy deposit of urates and uric acid. Nov. 1. Pustules filled and drying; continues to improve; appetite good. Nov. 4. Continues to improve; pustules drying, large and distinct; appetite good; urine clear	Oct. 29	6,495	1,031	Deep orange red	434.56	6.80	25.24	22 54	19.93	Trace
	30	9,322	1,024.5	Deep orange red	407.61	12.00	32.42	32.60	23.95	4.63
	31	16,967	1,016	Deep orange red	376.52	11.66	24.68	30.70	56.24	48.97
	Nov. 1	26,999	1,015	Orange	443.58	16.90	39.14	32 51	24.11	84.94
	4	23,866	1,016	Orange	555.84	18.60	46.32	46.32	31.38	63.84

three and a-half days after, on the 27th of Oct., 1864. Pulse full and good. 82 per minute; eruption quite full, but not confluent; has what appears to be a vaccine scar, and says that he was vaccinated when a youth; urine deep red and concentrated; lets fall heavy deposits of urates. Oct. 30. Eruption coming on fully in face and scattering on breast, but fuller on thighs; tongue slightly coated, and red at tip and edges; heavy yellow deposit in urine 31st. Heavy deposit in urine. Nov. 1. Pustules filled; patient doing well; still confined to bed. Nov. 2. Continues to improve; pustules drying; appetite improving. Nov. 4. Pustules drying; patient continues to improve. Nov. 5. Continues to improve.		30	9,243	1,027	Deep orange red	415.02	10.41	25.93	29.39	31.30	Trace
		31	7,927	1,029.5	Deep orange red	400.97	9.31	28.37	32.60	26.98	Trace
	Nov.	1	7,457	1,030	Deep orange red	348.05	15.30	28.36	33.28	24 94	2.13
		2	10,280	1,028	Deep orange red	422 36	12.16	29.59	37.54	29.94	24.60
		5	11,770	1,023.5	Deep orange red	355.04	9.49	28.17	29.30	26 44	33.81
Small-pox.—January, negro man. Age, 24. Light case of distinct small-pox. Had pain in head and back on the 25th of Oct., 1864. Eruption made its appearance on the 27th of Oct. Nov. 1. Patient doing well; urine deep-colored. Nov. 4. Pustules out in large numbers, fully formed, just beginning to dry upon surface; appetite good.	Nov.	1	6,444.9	1,023	Orange	240.86	6.40	23.16	27.79	15 64	1.85
		4	19,544	1,018.5	Orange	602.79	9.27	65 90	55.95	46.86	3.65
Case of Confluent Small-pox.—James Graves, 2d Regiment Georgia Reserves. Was taken with a chill, followed by high fever, Oct. 26, 1864. Has had high fever up to the present time, Nov. 1. The eruption attracted notice first on the night of the 27th, three days ago. At the present time, Nov. 1, face covered with eruption, and much swollen; eyes irritated and discharging matter; pustules confluent; heavy deposit in urine. Nov. 4. Confluent eruption encrusts the entire face, like a filthy mask. Nov. 5. Continues to improve; pustules drying.	Nov	2	9,713	1,022.5	Bright red	351.29	11.11	45.62	68.43	24.27	Trace
		5	4,807	1,023	Red	176.01	4.50	21.84	15.74	19.66	Trace
Confluent Small-pox.—Sawney, negro man. Age, 22. Was taken with characteristic symptoms of small-pox, Oct. 25, 1864. Nov. 2. Pustules not well filled; confluent; patient delirious. Nov. 4. Pustules filled; confluent; mind clear; urine high-colored, concentrated, with heavy deposits of uric acid and urates.	Nov	4	12,264	1,022	Red	469.37	10.64	49.87	46.93	33.36	Trace

When it is considered that these patients partook of but little food, and were in a state of almost absolute rest, it is evident that the urea is considerably increased in the urine of small-pox, amounting in one case to over six hundred grains during the twenty-four hours. As a general rule, the increments of this constituent corresponded with the severity of the disease, being but little above the normal standard in mild cases of varioloid, and increasing to double and even treble the usual amount in cases of confluent small pox. In like manner, the uric acid and the phosphoric and sulphuric acids were increased. The excretion of these constituents furnishes a measure of the destructive metamorphosis of the blood and muscular and nervous systems during the progress of the disease. The uric acid and urates exist in such large amounts in the concentrated and scant urine of small-pox as to form heavy deposits upon cooling. Uric acid is in like manner largely increased in hospital gangrene; and this increase, as in the case of small-pox, must be referred to the derangement of the nutrition, and oxidization of the nitrogenized elements and constituents and tissues.

The great concentration of the urine in small-pox may be due to several causes, as the congestion of the kidneys, the peculiar constitution of the blood, in virtue of which the water is held more tenaciously in combination with the nitrogenized elements and constituents, and the large abstraction of this constituent of the blood during the morbid changes in the integument.

The rapid diminution and complete disappearance of the chlorides during the exudative and suppurative stages of small-pox is important, as illustrating the offices of these metallic salts in the animal economy. The chlorides disappear so completely from the urine of severe cases of small-pox, that nitrate of silver gives scarcely a perceptible turbidness, when added to the urine acidulated with nitric acid. The wide diffusion of the chloride of sodium through the solid and fluid portion of the earth's surface, and its similar diffusion throughout all animal substances in definite proportions, as well as the craving of men and animals for this substance, and its established beneficial effects when used as an article of food, point to the importance of this substance in the metamorphosis of animal tissues. It is now well established that this salt is constantly associated with certain animal matters, and essentially influences their chemical and physical properties, rendering albumen, casein, and fibrin more soluble, and modifying their coagulating properties. The influence which this salt exercises on these protean compounds, and upon the physical properties of the blood corpuscles, as well as its relations to urea and glucose, renders this view probable that it is capable of forming definite chemical compounds with certain organic bodies which are most active in the changes characteristic of inflammation.

Recent investigations upon the composition of inflammatory exudations, pus and muces, indicate that this salt discharges an important office in the metamorphosis of the inflammatory materials of various diseases, as pneumonia and small-pox.

And it is not unreasonable to refer the absence of this salt in the urine in small-pox, not merely to the diminution of the amount ingested with the food, but to its abstraction by the exudation, and the part which it plays in the metamorphosis of the organic constituents into organized cells and fibres.

We have thus established by the preceding observations that—

1. Cow-pox (vaccination) produces a profound change in the chemical constitution of the human body.

2. When the small-pox poison induces fever after vaccination, and the disease appears in a modified form, known as varioloid, the course of the

nperature differs in a marked degree from that of true small-pox; in the rmer the fever is continuous and forms but one paroxysm; in the latter e fever is intermittent or remittent.

In varioloid the fever subsides and disappears with the appearance of e eruption.

In small-pox, the fever often subsiding after the appearance of the erup-n, reappears during the filling of the vesicles or eruption with pus.

3. In varioloid the increment of urea, uric acid, free acid, phosphoric d and sulphuric acid in the urine is comparatively slight.

4. In small-pox there is a marked increment in the urea, uric acid, free d, phosphoric acid and sulphuric acid.

5. The action of the vaccine virus tends to prevent secondary fever and oid oxidation of the nitrogenesed and phosphorized constituents of the od, muscles and nervous tissue.

6. It is evident that the cow-pox virus protects from small-pox, by pro-ing profound changes in the chemical constitution of the solids and ids of the human body.

URIOUS VACCINATION OR THE ABNORMAL PHENOMENA ACCOMPANYING AND FOLLOWING VACCINATION.

SES OF THE VARIOUS DEVIATIONS OF VACCINE DISEASE FROM ITS NORMAL COURSE—DANGER OF THE INTRODUCTION OF OTHER DISEASES INTO THE ORGANISM BY VACCINATION, VACCINO-SYPHILITIC INOCULATION—POST-VACCINAL SYPHILIS.

o question is of greater importance to the citizens of the United States America, than the arrest, prevention and exclusion of small-pox. This hsome disease has in past times after its introduction by Europeans opulated the native races of the North American continent; and but for practice of vaccination by the Medical Profession of the United States, llpox would find a permanent home in this great and growing country; the facilities of travel by steamboat and railroad are so great that rcely a citizen of this mighty republic would escape this foul pestilence. question of the arrest and exclusion of small-pox is of especial interest he citizens of Louisana, who in virtue of the geographical position of r State, hold the key to the Missisippi valley.

e have established by original investigation and by statistics derived n official sonrces, and consolidated especially for this inquiry, the great ection afforded by vaccination to the citizens of the Eastern, Middle and thern States, whose settlement and history antedated by periods ranging n seventy to two hundred and more years, the announcement of the overy of Edward Jenner.

remains that the value of vaccination should be impartially considered ll its varied respects, and that all sources of accident, error and danger ing from this operation should be fairly discussed.

The experience gathered by the medical officers of the Southern (Confederate) Army during the great American Civil War of 1861-1865 was of great value, and opened an entirely new chapter in the history of vaccination.

At the present time the enemies of vaccination appear to be gathering renewed strength, from the apparent failures and accidents occasionally attending this operation.

Like all other great discoveries, vaccination has been at one time extolled for powers which it does not possess, and at others blamed for accidents for which it was not justly chargeable.

IN THE EARLY HISTORY OF VACCINATION, PROTECTIVE POWERS AGAINST CERTAIN DISEASES WERE ERRONEOUSLY ATTRIBUTED TO COW-POX INOCULATION.

Soon after the world was informed that the vaccine poison was preventative of the small-pox, a disposition was shown by physicians and speculative men to extend its influence and prophylastic powers to other diseases.

The idea was advanced, that the morbid action excited by the virus from the cow, could as well prevent other contagious distempers, as that one for which it was particularly employed; and if it was capable of doing such good in the human constitution it would be no less operative in the bodies of brutes.

Accordingly it was said that the plague of Syria, could be prevented by previous vaccination; but M. Valli who made the experiment on himself was seized afterwards by the plague.

This alleged power of vaccination in controlling the plague, attracted at an early period a considerable degree of attention, and Dr. Jenner received letters on this subject from many quarters.

The circumstances having been made known to the Spanish Consul at Morocco, a communication was transmitted to Sir Joseph Banks on that subject, and from him to Jenner.

The opinion of Jenner on this point was thus expressed.

"I never was so sanguine in my hopes of seeing the plague extinguished by vaccine inoculation as some of my friends were, as you may have seen by the few introductory lines which accompanied Dr. Carro's letters in the public papers." "I will just drop a hint; the vaccine disease, in my opinion, is not a preventive of the small-pox, but the small-pox itself; that is to say, the horrible form under which it appears in its contagious state is (as I conceive) a malignant variety. Now if it should ever be discovered that the plague is a variety of some milder disease generated originally in a way that may even elude our researches, and the source should be discovered from whence it sprang, this may be applied to a great and grand purpose. The phenomena of the cow-pox open many paths for speculation, every one of which I hope may be explained."

The prophetic hope of Jenner, breathed more than half a century ago, has and is being realized in our day by the investigations of Pasteur, Koch and others.

M. Valentine of Marseilles, in a letter to Dr. Samuel Mitchell of New York presented the following:

"I think it may be agreeable to you to become acquainted with a letter written by the Hospodar of Wallachia, to my friend, Dr. Carro, of Vienna. It was published a few months ago, in the *Bibliotheque Britanique*, a French journal published at Geneva. That Prince is well known to be one of the most learned, polite and liberal men of the present day. What he says on the plague seems to be worth a volume.

"*Sir*—I have received the letter you have done me the honor to write me, dated April the seventh, together with the work which accompanied it. I have perused the whole, with the lively interest which talents and intrepidity engaged in the cause of humanity, never

to inspire. After having given so striking an instance of your confidence in the -pox, it was well worthy of the extent of your ideas, to seek a preventive against of the greatest scourges of the earth. But you know, Sir, that I belong to a country re it is but too easy to make observations on the plague. I have seen this capricious ase assume all forms, and exhibit the most opposite symptoms. It has frequently ared under the guise of an *inflammatory fever*, and then suddenly disclosing all the liar symptoms, so that most inexperienced physicians have been strongly deceived rescribing blood-letting, which has produced the most fatal effects. Sometimes it nences its career by *an inflammation of the stomach*, accompanied by signs of a septic ent, which infects the whole alimentary canal, attacks the nervous system, and mes the character of a deadly malignity. Other persons seized by the disease, have no other symptoms than those of uneasiness and surprising weakness in all the joints, at the physicians could consider it only as a *slow fever, invading the whole nervous sys-*

From this proteiform variety of symptoms, we are to suppose that the pestilential mata, introduced into the mass of humours incorporated with them, and excite toms corresponding to the peculiarity of constitutions in the sick; and that we are spect a remedy which promises uniformity either to prevent this distemper, or to it.

Mr. Valli, on his passage through Bucharest, owned to me that his experiments with pox had taught him nothing. [Dr. Valli returned from Constantinople to Italy. is the man who inoculated himself for the plague, and who shut himself up in a ferous hospital at Constantinople. All the hopes he once entertained of preventing plague by vaccination are vanished.] And the notion of guarding against the plague oculating with its own poison promises still less success, because it is very common e people who have been cured of it ten times die on the eleventh.

Shall I give you, sir, an instance of the whimsicalness of this disease? The Imans lice charity with the most religious zeal. We observe some of them who, after hav- washed, rubbed and buried thousands of those whom the plague has killed, without eriencing the smallest inconvenience, are attacked and overwhelmed at times when are least exposed to the supposed exciting cause. My opinion, therefore, is that in resent state of our knowledge, the best thing we can do in this respect is to estab- hospitals, over which men of your merit cannot be too vigilant for the purpose of mending proper discipline to governments.*

have the honor to be, etc., CONSTANTIN YPSILANDY."

Dr. Jenner proposed vaccination in hydrophobia. Thus in a letter to R. Dr. Worthington, dated London, Flading's Hotel, Oxford street, June 2 811, he says:

esterday I dined with Professor Davy. I wish you had been with us. His mind is a blaze. He seems to be one of those rare productions which nature allows us to a score of centuries. We touched on hydrophobia. He started an ingenius idea, of counteracting the effect of one morbid poison with another. What think you of er?

ot its broth, but its fang, as soon as the first symptom of disease appears from *ation*. If this should succeed we must domiciliate vipers as we have leeches. But this hint I should be disposed to try, under such an event, vaccination; as it can st always be made to act quickly on the system, whether a person has previously s influence or not, or that of the small-pox."

hn Archer, M. D., of Hartford county, Maryland, recommended vacci- on as a remedy for pertussis, in a letter addressed to Dr. Samuel l am Mitchell, of New York, dated November 15, 1808.

r. Archer stated that he had "vaccinated six or eight patients that the whooping-cough, and in every case it succeeded in curing this most blesome disease."

he whooping-cough does not come to its height in less than six weeks from its com- ment, and then, when a favorable termination is expected, the declension of the se is gradual and it does not terminate in less than six weeks more. To arrest this ing disorder in its progress, I would recommend vaccination in the second or third of the whooping-cough. The termination of the vaccine disease will be the termi- n of the whooping-cough; that is, as soon as the vaccinated part loses the efflores- , and the scab begins to dry and becomes of a blueish or brownish color, there will e an evident change in the whooping-cough for the better, and the severe symp- will cease.—*Medical Repository. Vol.* 4. *New York*, 1809; *p.* 182.

* Medical Repository and Review of American Publications on Medicine, Surgery and the Auxiliary es of Science. Conducted by Samuel Latham Mitchell, M. D., and Edward Miller, M. D. Vol. 3. ork, 1806; pp. 427-429.

"It was even reported that vaccination was an effectual bar against the syphilis. With reference to this supposed power of the vaccine virus, a writer in the Medical Repository, in the year 1805 (vol. 2, p. 76), remarks: 'Of this power we have heard no proof, and as far as our observations extend, the old enemy of the gentlemen of gallantry harasses them as sorely as ever. Should they be able to take shelter behind the vaccine it would be a protection to which they might gladly betake themselves.'"

It was also claimed in the early part of the nineteenth century,* even before 1805, that the *rot in sheep* could likewise be prevented by vaccination. Experiments, however, demonstrated that the cow-pox was powerless to preserve these animals from that distemper. Dr. De Carro testified that this operation, which was called clavelization, was quite fashionable in some parts of Germany, but that there were no facts to prove that the experiments had prevented *rot in sheep*. The expectations entertained of vaccination preventing hydrophobia in dogs were equally fallacious.

SPURIOUS VACCINATION, OR THE ABNORMAL PHENOMENA ACCOMPANYING AND FOLLOWING VACCINATION, EXCITED THE ATTENTION OF THE MEDICAL PROFESSION OF ENGLAND IN THE EARLIEST PERIOD OF THE HISTORY OF VACCINATION.

It has been shown by the preceding works of Edward Jenner, Pearson and Woodville that the phenomena of cow-pox and vaccination were critically studied, and the causes of deviation in the progress and effects of the disease carefully noted.

The enemies of vaccination seized with avidity upon all facts which tended to weaken the confidence of the profession and public, and to excite prejudice against the measure proposed by Dr. Jenner for the eradication of small-pox.

Drs. Wm. Rowley, B. Moseley and R. Squirrel (John Gale Jones) not only published works against vaccination, but circulated prints representing the human visage in the act of transformation and assuming that of a cow. Dr. William Rowley exhibited in all the touching simplicity of graphic delineation a *Master Jowles, the cow-poxed, ox-cheeked* young gentleman, and the Miss Mary Ann Lewis the *cow-poxed and cow-manged* young lady.

The articles of this celebrated triumvonate—Moseley, Rowley and Squirrel—appeared in the columns of the *Independent Whig* and of the *Medical Observer*, and also as separate treaties.

I have in my possession a translation in French of the books of Rowley, Moseley and Squirrel, entitled as follows:

La vaccine combattue dans le Pays ou elle a pris naissance, ou traduction de Trois ouvrages Anglais; Savori.

1. *De l'inefficacité et des dangers de la vaccine; ouvrage, dans lequel sont rapportes plus de cinq cents accidents; suivi d'un Mode de Traitement pour les Maladies causées par la vaccine, Traduit sur la troisième edition de docteur William Rowley, auteur de la Médecine Universelle, Membre de l'Universitiré d'Oxford, du College Royal de Médicine, et professeur*, etc.

2. Discussion Historique et critique sur la vaccine, par le Docteur Moseley, Médicin de l'Hôspital Militaire de Chelsea, membre de College de Médecine de Londres, auteur d' un traité sur les Maladies tropiques des Rapports faits au comité de la Chambre des Communes, par plusieurs Medecins et Chirurgiens, concernant la vaccine.

*The Medical Repository, vol. 2; New York, 1805; pp. 75-76.

. Observations sur l'Inoculation variolique tendant, à prouver qu'elle plus salutaire pour le genre humain que la vaccination ; par R. Squirrel, teur en Médecin, ancien pharmacien à l'Hôspital de la petite verole et noculation.
Aux Deux Gravures Coloricés. A Paris, Chez Gignet et Michaud, Im- m. ; Libraires, Rue des Bons-Enfants, No. 34, 1807.
The work of Dr. William Rowley is illustrated by 504 examples or cases "the accidents occasioned by vaccination."

Dr. Moseley, physician to Chelsea Hospital, first made his attack upon cow-pox in a treatise on sugar ; and his bitterness and prejudice claimed see in distant prospects, an awful aggravation of human ills, from an mixture of bestial humours, which the *cow mania* as he elegantly termed hreatened to inflict upon the human race. He even predicted an altera- in "the human form divine," and that another brood of minotuars would rspread the land "Semibovemque virum Semiviriemque borum."

his attack of Dr. Moseley on vaccination brought out many champions, the side of Dr. Jenner, prominent amongst whom was Mr. John Ring. t first Mr. Ring's opinion on vaccination had been somewhat modified the publications of Drs. Pearson and Woodville ; but when Dr. Jenner's urate details were confirmed and illustrated by his own experience, he oted a great part of his professional life to the cause of vaccination. Mr. g investigated every adverse case that he heard of in London ; he offered tuitous vaccination to all who would accept of it ; and he marshalled the f medical men in London, who had satisfied themselves of its efficacy, procuring their signatures to the following testimony.

"Many unfounded reports have been circulated, which have a tendency to prejudice public against inoculation for the cow-pox. We, the undersigned, physicians and eons, think it our duty to declare an opinion that those persons who have had the -pox are perfectly secure from the future infection of the small-pox. We also de- that the inoculated cow-pox is a much milder and safer disease than the inoculated l-pox."

his document bears the signature of thirty-three of the most eminent sicians, and of forty distinguished surgeons of the London College of gery, amongst whom are the well-known names of Baille Vaughn erwards Sir Henry Halford), Cline, Cooper, Abernethy, Lettsom, Willan, thshere, Maton, Lynn, Blair, Dundas, Good, John Pearson, James re, Saunders, Croft, Garnett, etc., etc.

r. Jenner, in a letter to R. Dunning. Esq., dated Berkley, February 10, 5, thus alludes to the subsequent publication of Dr. Moseley:

"Have you seen Moseley's infamous pamphlet? You ask for fatal cases of the vaccine. gentlemen, in one single paragraph, furnishes you with some of the most terrible s that were ever heard of from this cause. One would suppose he was speaking of mall-pox, as he tells us the children did not lose their torments even in the article eath! Luckily, he takes away every thing like truth that can attach to this history nitting every kind of reference. What punishment does a man of this description t?"

a letter addressed to R. Dunning, Esq., dated Cheltenham, February 21, 1806, he thus acterizes the injurious effects of the statements of Rowley, Moseley and Squirrel:

"What havoc the anti-vaccinationists have made in town by the reintroduction of va- s inoculation! It is computed that since April last, not less than 6,000 persons in metropolis, and the villages immediately in contact, have fallen victims to the small- One would scarcely conceive it possible ; but these murders are, for the most part, attributed to the absurd productions of Moseley, Rowley, and that pert little rrel, to say nothing of Goldson.

is about London that the venom of these deadly serpents chiefly flows. So little the people around me (though only 100 miles from it) felt it, that since August last e vaccinated within a few of 1500 ; and I must certainly deem it a piece of extreme fortune that out of the many thousands I have vaccinated, no failure or accident

of any sort has arisen to my knowledge." "Did you see a paper in the last Journal fro a Dr. Wood? I think it capable of doing great mischief, as it will tend to make pract tioners careless about a point of great consequence, namely, an herpetic state of t skin, coincident with vaccination, which you as well as myself, have not only observe but publicly and very properly noticed. My communications from various parts of t world are very cheering—800,000 cases from India."

Dr. Jenner, in connection with the subject of the interference of herp with the vaccine pustules, again refers to Dr. Moseley, in a letter to Dunning, Esq., dated Berkley, April 22, 1806:

"The impertinent interference of herpes with our vaccine pustules, I thought of much consequence to be generally known, as to induce me to reprint my paper on t subject for distribution. With this you will receive two copies; one of which I mu beg your acceptance of; and the other you will have the kindness to present to the Do Jennerian Society, with my grateful respects to the members. You will do much publ good by enforcing attention to the progress of the vaccine pustule. If it be torn pieces, either by the nails or the lancet, before the business for which it was placed up the arm was accomplished, it is unreasonable to suppose that perfect security can follo But to what purpose shall you or I address the public on these subjects, while such u principled characters as Moseley, and those who enlist under his banner, still contin to instil, or rather to push by violence, into the minds of the British nation their do trines? Have you seen Moseley's last pamphlet, the one just published? It is far mo violent than any of the preceding. In this he has brought forward a string of cases point out my failures in vaccination—cases of small-pox after cow-pox. But mark h audacity. They are of children I never saw in my life, and whose names I never heard till they were placed before me in the murderons publication. Mr. H. Jenner, who name he brings forward with a list of failures annexed, assures me that *the whole* is most impudent forgery. What can be done with such a man as this? A general man festo with the signatures of men of eminence in the profession (and I really think w should now embrace nearly, if not quite, the whole), in favor of vaccination, would, anything could, crush the hissing heads of such serpents at once; and I fear nothin short of it, unless Parliament had a mind again to take the matter up."

From the preceding extracts it is evident that Dr. Jenner has made careful study of the effect of skin diseases upon the progress of the va cine vesicles; and we find him thus alluding to the same subject in a lette dated Berkley, February the tenth, 1805.

"In the cicatrix of those children on whose arms, through the intervention of herpe the pustule has proceeded irregularly, I find in general a singular deviation, which i will be difficult to describe by words and I draw most wretchedly. Instead of the fla correct indentation, the cicatrix exhibits a preceptible elevation of a conical shap though very slightly so. I have a fine specimen in a child lately inoculated, with recei tinea capiles, and shall endeavor to take a cast in wax or Paris plaster. Indeed a seri of pustules might be done in this way, and afterwards colored."

The important suggestion of Dr. Jenner, with reference to casts, andillu trations of the vaccine cicatrix was fulfilled in an able manner by J. E. I Denarp Decanteleu in his Monographie des cicatrices de la vaccine, pul lished at Paris in 1851.

Dr. Denarp Decanteleu published a large lithographic drawing, copie from a collection of casts in stucco, taken from the arms of a large numbe of subjects, this collection of casts of vaccine scars, colored after nature the author refers to in the single number of his unfinished Monograp and offered them for the inspection of his readers as corroborativeof th accuracy of his drawing*.

Dr. Jenner held that the herpetic affections affected the progress o variolous inoculation, as well as that of the cow-pox. His views are thu stated in a letter to James Moore, Esq., dated Berkley, February 26, 1810

"Do you not intend mentioning cases of small-pox after supposed security from small pox inoculation? Such cases are innumerable. I think there are thirteen on record among the families of the nobility. Blair, I believe, has collected the greatest numbe

*Dr. Henry Austin Martin of Boston purchased, from the publisher, Balliere of Paris, all that remain of the edition of this work; and I am indebted to the courtesy and generosity of Dr. Martin for a copy this valuable contribution to the history of vaccination.

hem. You know my old opinion of the matter; that they occur, for the most part, ough the interference of herpetic affections at the time of inoculation. One decisive of you will find in Willan's Vaccine Book, given by me. From facts I go to hypo- is; and conceive that the appearance of the small-pox twice in the same individual es from the same cause?

On this subject I could write a long chapter; but as it would necessarily be theoretical, would not thank me for it. I must just touch upon it. We see that variolous matter be generated by inoculation on the arms of one person in that degree of perfection o communicate the small-pox by transferring it to those of another; yet the person se constitution shall in the first instance have been exposed to it, shall remain unpro- ed from future infection, although the system has been deranged during its presence he skin. Where, then, is the difference, whether the morbid poison was confined or ted to a point or two, or spread universally in the form of pustules. If the change ured to give security could not take place in this one instance, why should it in an- r under the same existing circumstances? The *peculiarity of the action* (I do not like all it *morbid*, because it is generally salutary), is often too strong to be overcome, I am ready to conclude that this is not a frequent occurrence.

The more I reason upon it, the more I am convinced that the idea I broached in my publication on the cow-pox, namely: that poisonous animal fluids are not absorbed carried into the blood vessels is correct."

In the same letter to Mr. Moore, Dr. Jenner thus exposes and disposes of enemy, the notorious "*Squirrel:*"

John Gale Jones, I see, has at length succeeded in obtaining the situation for which as long been a candidate. This fellow had once the impudence to desire a man to on me in Bedford Place, to say, that he, Jones, would advise me immediately to London, for there was no knowing what an outraged populace might do. He was writer of Squirrel's book, the long anti-vaccine columns in the *Independent Whig*, and y of the most violent papers in the *Medical Observer*. I was held up in his Forum everal nights as an object of derison; but I silenced him by the same weapon as I many others—contempt."

SEARCHES UPON "SPURIOUS VACCINATION," OR THE ABNORMAL PHENOMENA ACCOMPANYING AND FOLLOWING VACCINATION IN THE CONFEDERATE ARMY, DURING THE RECENT AMERICAN CIVIL WAR, 1861-1865.

TION 1.—PRELIMINARY OBSERVATIONS—ACCIDENTS ATTENDING VACCINATION AMONGST THE CITIZENS AND SOLDIERS OF THE CONFEDERATE STATES—NECESSITY FOR THE INVESTIGATION—METHOD, EXTENT AND OBJECT OF THE INQUIRY—THE INJURIOUS EFFECTS OF VACCINATION REFERRED TO SIX CAUSES—CIRCULAR LETTER ADDRESSED TO THE MEDICAL OFFICERS OF THE LATE CONFEDERATE ARMY—FACTS ILLUSTRATING THE VALUE OF VACCINATION AND THE FATALITY OF SMALL POX—DESCRIPTION OF SMALL-POX BY SIR MATTHEW HALE—DR. JENNER POINTED OUT SOME CAUSES OF THE ACCIDENTS ATTENDING VACCINATION AND GAVE RULES FOR THEIR AVOIDANCE.

uring the recent civil war, untoward results followed vaccination, and a mber of deaths both amongst the troops and citizens were directly re- ble to the effects of vaccination. So great was the evil in the army, t it was made a special subject of investigation, and a number of inter- g reports were prepared by several of the medical officers, upon what w most generally called in the army, "spurious vaccination." Our f d, Surgeon Jackson Chambliss, in charge of Div. No. 1, Camp Winder H pital, Richmond, had examined and recorded a large number of cases o spurious vaccination," illustrated with drawings of the various local d ases and skin affections. As far as our information extends, this valu- mass of matter, relating to one of the most important subjects in its b ings upon the welfare of the human race, was destroyed during the e uation of Richmond.

o common had accidents become after vaccination, and so strong was t prejudice growing, both in the army and amongst citizens against its e loyment, that we instituted a series of experiments upon the inocula- t of cows with small-pox matter, in order to produce, if possible, cow- p from whence a supply of fresh and reliable vaccine matter might be o ined. It was our design to carry out an extensive series of investiga- t s upon the various secondary affections following vaccination, and to d rmine, if possible, what contagious principles could be associated with t ymph of the vaccine vesicle. These labors were brought to a sudden a unexpected close, by the disastrous termination of the civil war. As f however, as our labors amongst the Confederate troops extended, we w led to attribute the injurious effects of vaccination to the following c es:

T.—*Depressed forces, consequent upon fatigue and exposure and poor diet; i verished, vitiated and scorbutic condition of the blood of the patients vac- c ted, or yielding vaccine matter.*

2D.—*The employment of matter from pustules or ulcers which had deviated from the regular and usual course of development of the vaccine vesicle; such deviation or imperfection in the vaccine disease or pustule being due mainly to previous vaccination, and the existence of some eruptive disease at the time of vaccination. Or, in other words, the employment of matter from patients who had been previously vaccinated, and who were effected with some skin disease at the time of the insertion of the vaccine virus.*

3D.—*Dried Vaccine, Lymph or Scabs, in which decomposition has been excited by carrying the matter about the person for a length of time, and thus subjecting it to a warm, moist atmosphere.*

4TH—*The mingling of the Vaccine Virus with that of the Small-Pox—matter taken from those who were vaccinated while they were laboring under the action of the poison of Small-Pox, was capable of producing a modified Variola, and comparatively mild disease in the inoculated, and was capable of communicating by effluvia Small-Pox in its worst character to the unprotected.*

5TH.—*Dried Vaccine, Lymyh or Scabs, from patients who have suffered with Erysipelas during the progress of the Vaccine Disease, or whose systems were in a depressed state from improper diet, bad ventilation, and the exhalations from Typhoid Fever, Erysipelas, Hospital Gangrene. Pyœmia, and offensive suppurating wounds.*

6TH—*Fresh and dried Vaccine Lymph and Scabs, from patients suffering from Syphilis, at the time, and during the progress of vaccination and the vaccine disease.*

I addressed a large number of communications relating to "*Spurious vaccination*," to Southern physicians formerly connected with the *Confederate Army*, and the replies to these inquiries will be found in the following pages.

The following is the general form of circular employed:

_____

_____—18—

_____, M. D.

Dear Sir—

* * * * * * * * * * * *

In the circumscribed and distressed condition of the Southern States, cut off from the surrounding world, with the necessity of Vaccinating the entire male population capable of bearing arms, and without any means of obtaining fresh and reliable matter outside of the Confederate States, the experience of the Medical Officers of the Confederate Army possesses a high and peculiar value.

I shall be glad to receive from you a communication, setting forth your views at length upon the nature and value of Modified Inoculation, and *upon the* NATURE *and* CAUSES *of the* ACCIDENTS *resulting from* VACCINATION ("SPURIOUS VACCINATION") *in the Confederate Army.*

The subject of the TRANSMISSION *of* SYPHILIS *through the medium of the* VACCINE VIRUS, should be carefully discussed, and all conclusions should be supported by carefully recorded *facts* and *cases*. *One* well reported *case*, proving the transmission of *Constitutional Syphilis*, or any other disease, as *Erysipelas*, by vaccination, is worth large volumes of mere opinions and assertions.

We should exercise the utmost caution in discussing the value of vaccination, and the causes of the accidents, which have tended of late, to bring it into disrepute with the public; for all conscientious physicians and lovers of mankind will agree that this question is interesting, not only to the physiologist and medical practitioner, but that it concerns every community on the earth, and comes home to every individual of the human race.

It has been well said, by a writer who was not a medical man, "It is difficult to conceive that there should be one being who would not be affected by its decision, either in his own person, or by those of his nearest connexions. To the bulk of mankind wars and revolutions are things of infinitely less importance; and even to those who busy themselves in the tumult of public affairs, it may be doubted whether anything can occur that will command so powerful and permanent an interest, since there are few to whom fame or freedom can be so intimately and constantly precious as personal safety and domestic affection."

t is important that we should carefully distinguish the accidents which result from carelessness in the selection of the matter, and from ignorance of the true character progress of the vaccine disease.

ou will oblige me by answering at an early day, and also by forwarding the address any physicians who have made this subject a special study, and who have recorded -tworthy observations. Very respectfully yours, JOSEPH JONES.

This circular letter was not as widely distributed as desired; as it has n difficult to ascertain the address of many of the medical officers of the uthern Army, on account of the sudden manner in which the struggle minated, and the utter and sudden loss of all organization and records, l on account of the imperfect mail facilities of the Southern States.

The replies which have been received in response to my letters, will be nd under the different divisions of the inquiry; and we have preferred senting each paper entire, when using it for the illustration of some ticular branch of the subject, although it might contain some matter elevant to the subject under immediate consideration. In this manner hoped to do justice to those contributing facts and observations; and ilst we have freely expressed the results of our investigation, and given judgment without reserve, we have endeavored, on the other hand, to id all personal criticism.

Before proceeding to the discussion of the subjects under consideration, s but just that I should disclaim all designs of decrying vaccination en properly performed. Nothing is farther from my intention, than n in the remotest manner, to detract from the value of the greatest phys- l boon ever bestowed by a mortal upon the human race.

From authentic documents and accurate calculations, it has been ascer- ned that *one* in fourteen, of all that were born, died of the small-pox, n after inoculation had been introduced; and of persons of all ages en ill of the small-pox in the natural way, one in five or six died; and ddition to this frightful mortality, alike observable in all the different ions of the globe, many of those who recovered were permanently dis- ired, or deprived of eyesight, or left with shattered constitutions the y to pulmonary consumption, chronic opthalmia, and scrofula.

According to the researches of Black, Lüssmileh and Frank, eight or e per cent. of the human race were carried off by small-pox: and Duvil- l endeavored to show that of 100 persons, only four reached the age of ty years without having it; that one in seven or eight, who were affected, l; and that of those who were attacked in infancy only two-thirds aped. Before the introduction of vaccination, small-pox was infinitely e destructive to human life than the plague itself; it has swept away ole tribes of savage and half civilized people, and its miserable victims e been abandoned by their nearest relatives and friends, as persons med by divine wrath to irrevocable death; it was calculated that 210,000 victims to it annually in Europe, and Bernouilli believed that not less n fifteen millions of human beings were destroyed by small-pox every nty-five years, that is six hundred thousand annually; and this loath- e disease was not only universal in its ravages, but was so subtle in influence and insidious in its attack, that all efforts to stay its violence o prevent its approach, were utterly futile. Even inoculation whilst it far less fatal than the natural small-pox and thus benefited the indi- nal, tended nevertheless to increase the spread of the disease, and its nsive adoption was attended with a most marked increase of mortality e disease in the human race.

Sir Matthew Hale, in a letter of advice and admonition to one of his grand- s, has given an excellent picture of this disease, which well illustrates

its odious characters, and exhibits the impression which it makes on the world at large, in a stronger light than if the description had been drawn up by a strictly professional hand.

"First, therefore, touching your late sickness (small-pox) I would have you remember these particulars: 1st. The disease itself in its own nature is now become ordinarily very mortal, especially to those of your age. Look upon even the last year's general bill of mortality, you will find near two thousand dead of that disease; and, had God not been merciful to you, you might have been one of that number with as great likelihood as any of them who died of that disease. 2d. It was a contagious disease that secluded the access of your nearest relations. 3d. Your sickness surprised you upon a sudden, when you seemed to be in your full strength. 4th. Your sickness rendered you noisome to yourself and all that were about you; and a spectacle full of deformity, by the excess of your disease, beyond most that are sick thereof. 5th. It was a fierce and violent sickness: it did not only take away the common supplies of nature, as digestion, sleep, strength, but it took away your memory, your understanding and the very sense of your condition, or of what might be conducible to your good. All that you could do was only to make your condition more desperate, in case they that were about you had not prevented it and taken more care for you than you did or could for yourself. 6th. Your sickness was desperate, in so much that your symptoms and the violence of your distemper were without example; and you were in the very next degree to absolute rottenness, putrefaction and death itself."

By the unaided efforts of a man, emulous not of distinction but desirous of advancing truth, and promoting the happiness and well being of his fellow creatures, and distinguished as much for his humility, long suffering and perseverance, as for his unsurpassed powers of practical observation, the world has been furnished with the means of completely eradicating this terrible scourge, by substituting the same disease in a mild, modified form non-communicable by effluvia and capable of affording complete immunity from the natural small-pox.

So far, therefore, from charging the accidents which we are about to describe, to the process of vaccination, as established and advocated by Edward Jenner, we are persuaded that a very large part, if not the whole, of these distressing accidents and failures, are to be ascribed directly or indirectly to the ignorance, and inattention of those who practice vaccination. We have no more sympathy with the modern opponents of vaccination, than we have with those English physicians who attempted to decry the labors and to steal the honest dues of their immortal countryman, and who condescended to such low expedients as to caricature the process of vaccination, by representing the human vissage under its effects, in the act of transformation into that of the lower animals, the cow and the horse. And we would heartily endorse any public enactment which would guard in a proper manner the process of vaccination; and at the present time, some of the older European edicts upon the subject of vaccination, as those of the Emperor of Russia in 1811, and of the King of Wirtemburgh in 1818, might be reënacted, by the General and State Governments, with great benefit to the people.

If the profession had uniformly adhered to the advice and the rules established by the illustrious founder of vaccination, we would have been spared the vast majority of the unfortunate accidents which tend to bring this the only safeguard against the small-pox, into disrepute.

Dr. Jenner gave the most minute attention to every deviation from the correct progress of the vaccine vesicle, to the state of the virus to be inserted, to the condition of the skin of the person about to be vaccinated, and to the character of the vesicle itself; and so early as the year 1799, had ascertained by the clearest evidence, some of the causes of accident and failure, which had been confirmed by later observations.

He showed that in some cases the system was not rendered totally unsusceptible to the variolous contagion, either by the cow-pox vaccination or the small-pox; but that vaccination, when properly performed with genuine matter, afforded as complete protection as the small-pox itself. He proved that by inoculating a person who had gone through the cow-pox, with variolous matter, it was possible to excite a local vesication, the virus from which was capable of producing a mild but efficacious small-pox. He

ther maintained that modifications and varieties might arise in the vac-
e pustule, and that these varieties were such as to produce "every gra-
ion in the state of the pustule, from that slight deviation from perfec-
n, which is quite immaterial, up to that point which affords no security
all." He held that fluid taken from a spurious vaccine pustule can pro-
gate and perpetuate its like, and even if it be taken from a genuine pus-
e in its far-advanced stages, it is capable of producing varieties which
l be permanent if we continue to employ it.

enner laid great stress upon the herpetic state of the skin, in inducing
riation in the normal progress of the vaccine disease; but every devia-
n, from whatever cause it may have arisen, was considered by him of
greatest moment; and in all his published works, as well as in his
vate communications and letters, he never failed to urge the importance
the most scrupulous attention to the mode of propagation and to the
ble progress of the vaccine disease.

Thus in his paper on the "Varieties and Modifications of the Vaccine
stule," he thus urges upon the profession the necessity of the most
eful attention to this important subject:

I shall conclude this paper by observing that although vaccine inoculation does not inflict a severe dis-
but, on the contrary, produces a mild affection, scarcely meriting the term *disease*, yet, nevertheless,
noculator should be extremely careful to obtain a just and clear conception of this important branch of
cal science. He should not only be acquainted with the laws and agencies of the vaccine virus on the
itution, but with those of the variolous also, as they often interfere with each other.

general knowledge of the subject is not sufficient to enable us to warrant a person to practice vaccine
ilation: he should possess a peculiar knowledge; and that which I would wish strongly to inculcate, as
reat foundation of the whole, is an intimate acquaintance with the character of the true and genuine
ule. The spurious pustule would then be readily detected, whatever form it might assume; and errors
rn no more."

Dr. Jenner, in a letter written to Sir Gilbert, near the close of his life,
erates these precautions, and observes:

With regard to the mitigated disease which sometimes follows vaccination, I can positively say, and
be borne out in my assertion by those who are in future days to follow me, that it is the offspring en-
of incaution in those who conduct the vaccine process. On what does the inexplicable change which
s the constitution from the fang of the small-pox depend? On nothing but a correct state of the pus-
on the arm excited by the insertion of the virus; and why are these pustules sometimes incorrect, los
eir characteristic shape, and performing their offices partially?"—*Life of Edward Jenner, M. D.*
y John Baron, M. D.; *vol.* 2, *p.* 241.

enner even went so far as to maintain that the process of vaccination
ht be rendered ineffective by mechanically disturbing the vesicle, during
collection and transmission of the virus, and he insisted upon the ne-
ity of allowing one vesicle at least to run its course undisturbed.

o far, therefore, from desiring to injure the cause of vaccination by the
rd of distressing failures and accidents, it will be our endeavor, rather
ne spirit of Jenner, to guard the process, by so exposing the cause of
e accidents as to lead to their avoidance in future.

Ere I proceed, let me be permitted to observe, that truth in this, and
y other physiological inquiry that has occupied my attention, has ever
the first object of my pursuit; and should it appear in the present in-
ce that I have been led into error, fond as I may appear of the off-
ng of my labors, I had rather see it perish at once than exist and do a
lic injury."

SECTION II.—MODIFICATION, ALTERATION AND DEGENERATION OF THE VACCINE VESICLE, DEPENDENT UPON DEPRESSED AND DERANGED FORCES, RESULTING FROM FATIGUE, EXPOSURE AND POOR DIET; AND UPON AN IMPOVERISHED, VITIATED AND SCORBUTIC CONDITION OF THE BLOOD OF THE PATIENTS VACCINATED AND YIELDING VACCINE MATTER. IN SCORBUTIC PATIENTS ALL INJURIES OF THE SKIN TEND TO FORM ULCERS OF AN UNHEALTHY CHARACTER. EFFECTS OF SCURVY UPON THE CHARACTER AND PROGRESS OF THE VACCINE VESICLE.—INVESTIGATIONS UPON THE EFFECTS OF VACCINATION AMONGST THE FEDERAL PRISONERS CONFINED IN CAMP SUMPTER, ANDERSONVILLE, GA. EXAMINATION OF THE CHARGE URGED BY THE UNITED STATES MILITARY COMMISSION, THAT THE CONFEDERATE SURGEONS DELIBERATELY POISONED OR DESTROYED THE FEDERAL PRISONERS AT ANDERSONVILLE WITH POISONOUS VACCINE MATTER. DR. HAMILTON ON SPURIOUS VACCINATION IN THE U. S. ARMY. DR. L. GUILD ON THE MEDICAL RECORDS OF THE ARMY OF NORTHERN VIRGINIA. REPORTS ON SPURIOUS VACCINATION IN THE CONFEDERATE ARMY, BY S. E. HABERSHAM, M. D., OF AUGUSTA, GEORGIA, AND OTHER CONFEDERATE OFFICERS.

Large numbers of the Confederate soldiers manifested slight scorbutic symptoms, which were not sufficient to attract attention, or to induce treatment, and as far as we could learn, no attention was paid to this condition either in vaccination or in the selection of the vaccine lymph.

In scorbutic patients, all injuries tended to form ulcers of an unhealthy character, and the vaccine vesicles even when they appeared at the proper time, and manifested many of the usual symptoms of the vaccine disease, were nevertheless larger and more slow in healing, and the scabs presented an enlarged, scaly, dark, unhealthy appearance. In many cases a large ulcer, covered with a thick laminated crust, from one-quarter to one inch in diameter, followed the introduction of the vaccine matter into scorbutic patients. Matter from these scabs and sores was frequently used in vaccination, and this decomposing pus and blood acted as an animal poison in some cases, and especially in constitutions debilitated by exposure, fatigue and salt diet.

During the prosecution of the investigations which we instituted upon the diseases of the Federal prisoners confined at Andersonville, the opportunity was embraced of investigating the remarkable effects which followed the attempts of the Confederate medical officers to arrest the spread of small-pox by vaccination. In a number of cases large gangrenous ulcers appeared at the points where the vaccine lymph had been inserted, causing extensive destruction of tissues, exposing arteries, nerves and bones,

d necessitating amputation in more than one instance. These accidents l to the belief amongst some of the prisoners that the surgeons had in-tionally introduced poisonous matter into their arms during vaccination. After careful inquiry we were led to the conclusion that these accidents re, in the case of these Federal prisoners, referable wholly to the scor-tic condition of their blood, and to the crowded condition of the stockade d hospital. The smallest accidental injuries and abrasions of the sur-e, as from splinters, or bites of insects, were in a number of instances lowed by such extensive gangrene as to necessitate amputation. The ngrene following vaccination appeared to be due essentially to the same se; and in the condition of the blood of these patients, would most bably have attacked any puncture made by a lancet, without any vac-e matter or any other extraneous material. It appeared also that the ed scab, resulting from the vaccination of these scorbutic patients, was o capable of producing effects wholly different from the vaccine lymph healthy individuals; and in some cases these effects were of a most po-t and injurious character.

The cause of JUSTICE and TRUTH demands, at my hands, something re than this simple record, with reference to the *accidents* following *vac-ation* amongst the Federal prisoners confined in Camp Sumpter.

n the specification of the first charge against Henry Wirz, formerly mmandant of the interior of the Confederate States Military Prison, dur-his *Trial* before a *Special Military Commission*, convened in accordance h Special Orders No. 453, War Department, Adjutant General's Office, shington, August 23, 1865, the following is written:

"And the said Wirz, still pursuing his wicked purpose, and still aiding in carrying out conspiracy, did use and cause to be used, for the pretended purpose of vaccination, ure and poisonous matter, which said impure and poisonous matter was then and e, by the direction and order of said Wirz, maliciously, cruelly, and wickedly depos-in the arms of said prisoners, by reason of which large numbers of them, to-wit, one lred, lost the use of their arms, and many of them, about the number of two hun-, were so injured that they soon thereafter died: All of which he, the said Henry z, well knew and maliciously intended, and in aid of the then existing rebellion nst the United States, with the view to assist in weakening and impairing the armies e United States, and in furtherance of said conspiracy, and with full knowledge, ent and connivance of his co-conspirators aforesaid, he, the said Wirz, then and e did."

mongst the co-conspirators specified in the charges, were the Surgeon he Post, Dr. White, and the Surgeon in charge of the Military Prison pital, R. R. Stevenson. As ths vaccinations were made by their orders, by the medical officers of the Confederate Army, acting under their mand, the charge of deliberately poisoning the Federal prisoners with ine matter was a sweeping one, and whether intended so or not, affects y medical officer stationed at that post; and it appears to have been gned to go farther and affect the reputation of every one who held a mission in the Medical Department of the Confederate Army.

e acts of those who once composed the Medical Department of the federate Army, from the efficient and laborious Surgeon General to the mental officers, need no defence at my hands; time, with its unerring of historic truth, will embalm their heroic labors in the cause of suf-g humanity, and will acknowledge their untiring efforts to ameliorate most gigantic mass of suffering, that ever fell to the lot of a be-ered and distressed people.

lesire at the present time, simply to place on record, the results of 's which concern this country, no more than any other; and the results properly received without prejudice or malicious hatred, will be seen

to relate to the hygiene and to the diseases of prisoners, however confined, and wherever incarcerated, in civil or military prisons throughout the world.

In accordance with the direction of Dr. Samuel Preston Moore, formerly Surgeon General C. S. A., I instituted during the months of August and September, 1864, a series of investigations upon the diseases of Federal prisoners confined in Camp Sumpter, Andersonville, Georgia.

The field was of great extent and of extraordinary importance. There were more than five thousand seriously sick in the hospital and stockade, and the deaths ranged from ninety, to one hundred and thirty, each day. From the establishment of the prison, on the twenty-fourth day of February, 1864, to the first of October over ten thousand Federal prisoners died; that is, near one-third of the entire number perished in less than seven months. I instituted careful investigations into the condition of the sick and well, and performed numerous post-mortem examinations, and executed drawings of the diseased structures. The medical topography of Andersonville and of the surrounding country was examined, and the waters of the streams, springs and wells, around and within the stockade and hospital carefully analyzed.

The report which I drew up for the use of the Medical Department of the Confederate Army, contained a truthful representation of the sufferings of these prisoners, and at the same time gave an equally truthful view of the difficulties under which the medical officers labored, and of the distressed and beleaguered and desolated condition of the Southern States. Shortly after the close of the civil war, this report, which had never been delivered, on account of the destruction of all railroad communication with Richmond, Virginia, was suddenly seized by the agents of the United States government, conducting the trial to which we have alluded.*

It was with extreme pain that I contemplated the diversion of my labors in the cause of medical science, from their true and legitimate object, and I addressed an earest appeal, which accompanied the report, to the Judge Advocate, Colonel N. P. Chipman, in which I used the following language:

In justice to myself, as well as to those most nearly connected with this investigation, I would respectfully call the attention of Colonel Chipman, Judge Advocate U. S. A., to the fact that the matter which is surrendered in obedience to the demands of a power from which there is no appeal, was prepared solely for the consideration of the Surgeon General, C. S. A., and was designed to promote the cause of humanity, and to advance the interests of the medical profession. This being granted, I feel assurred that the Judge Advocate will appreciate the deep pain which the anticipation gives me that these labors may be diverted from the original mission, and applied to the prosecution of criminal cases. The same principle which led me to endeavor to deal humanely and justly by these suffering prisoners, and to make a truthful representaion of their condition to the Medical Department of the Confederate Army, now actuates me in recording my belief that as far as my knowledge extends, there was no deliberate or willful design on the part of the Chief Executive, Jefferson Davis, and the highest authorities of the Confederate Government to injure the health and destroy the lives of these Federal prisoners.

On the twenty-first of May, 1861, it was enacted by the "Congress of the Confederate States of America," "That all prisoners of war taken, whether on land or at sea, during the pending hostilities with the United States, should be transferred by the captors from time to time, as often as convenient, to the Department of War; and it shall be the duty of the Secretary of War, with the approval of the President, to issue such instructions to the Quartermaster General and his subordinates, as shall provide for the safe custody and sustenance of prisoners of war; and the rations furnished prisoners of war shall be the same in quantity and quality as those furnished enlisted men in the army of the Confederacy." By act of February 17, 1864, the Quartermaster General was relieved of this duty, and the Commissary General of Subsistence was ordered to provide for the sustenance of prisoners of war.

*I have since learned that the United States authorities gained knowledge of the fact that I had inspected Andersonville through information furnished by a distinguished member of the medical profession of the North, who, after the close of the war, had shared the hospitality of my own home.

ccording to General Orders No. 159, Adjutant and Inspector's General's Office, "hos-als for prisoners of war are placed on the same footing as other Confederate States pitals, in all respects, and will be managed accordingly."

The Federal prisoners were removed to Southwestern Georgia in the early part of 1864, only to secure a confinement more remote than Richmond and other large towns, m the operations of the United States forces, *but also to secure a more abundant and easy pply of food.*

s far as my experience extends, no person who had been reared upon wheat bread, l who was held in captivity for any length of time, could retain his health and escape ier scurvy or diarrhœa, if confined to the Confederate ration (issued to the soldier in field and hospital) of unbolted corn meal and bacon. The large armies of the Con-eracy suffered more than once from scurvy, and as the war progressed, secondary norrhage and hospital gangrene became fearfully prevalent, from the deteriorated con-on of the systems of the troops, dependent upon the prolonged use of salt meat. And for the extra supplies received from home and from the various benevolent institu-s, scurvy and diarrhœa and dysentery would have been still farther prevalent."

was believed by the citizens of the Southern States, that the Confederate authorities red to effect a continuous and speedy exchange of prisoners of war in their hands, on ground that the retention of these soldiers in captivity was a great calamity, not entailing heavy expenditure of the scanity means of subsistence, already insuffi-t to support their suffering, half-starved, half-clad and unpaid armies, struggling in field with overwhelming numbers, and embarrassing their imperfect and dilapidated s of communication; but also as depriving them of the services of a veteran army y equal to one-third the numbers actively engaged in the field; and the history of sequent events have shown that the retention in captivity of the Confederate prison-was one of the efficient causes of the final and complete overthrown of the Confeder-Government. * * *

is my honest belief that if the exhausted condition of the Confederate Government, h its bankrupt currency, with its retreating and constantly dimishing armies, with apparent impossibility of filling up the vacancies by death and desertion and sick-s, and of gathering a guard of reserve of sufficient strength to allow of the proper rgement of the Military Prison, and with a country torn and bleeding along all its lers with its starving women and children and old men fleeing from the desolating ch of contending armies, crowding the dilapidated and over-burdened railroad lines, adding to the distress and consuming the poor charities of those in the interior, who e harrassed by the loss of sons and brothers and husbands, and by the fearful visons tarvation and undefined misery, could be fully realized, much of the suffering of the eral prisoners would be attributed to causes connected with the distressed condition he Southern States.

he grand object of the trial and conviction of Henry Wirz was the con-tion and execution of President Davis, Gen. Robert E. Lee and other minent men of the Confederacy, in order that "TREASON MIGHT BE NDERED FOREVER ODIOUS AND INFAMOUS."

he Judge Advocate, N. P. Chipman, Colonel U. S. A., was not only f to this appeal, but in his final argument before "*The Military Com-sion*," or so-called "*Court*," whilst excluding all portions of my testi-ny which related to the distressed condition of the Southern States, and efforts of the medical officers and Confederate authorities to relieve the ferings of the prisoners of war, deliberately endeavored to arouse the red of the entire North against the author of the report and the medical ers of the Confederate army.

his statement will be sustained by the following quotation, which I ract from the "*argument*" of the Judge Advocate before the "*Court*:"

He had called into his counsels an eminent medical gentleman, of high attainments is profession, and of loyalty to the rebel Government unquestioned. Amid all the ils in this terrible tragedy, there seems to me none more heartless, wanton and void umanity than that revealed by the Surgeon General, to which I am about to refer. ote now from the report of this same Dr. Joseph Jones, which he says (Record, p. .) was made in the interest of the Confederate Government, for the use of the Medi-Department, in the view that no eye would ever see it but that of the Surgeon eral.

After a brief introduction to his report, and to show under what authority it was e, he quotes a letter from the Surgeon General, dated 'Surgeon General's Office, mond, Virginia, August 6, 1864.' The letter is addressed to Surgeon J. H. White, harge of the hospital for Federal prisoners, Andersonville, Georgia, and is as follows:

"*Sir*—The field of pathological investigation, afforded by the large collection of Federal prisoners in Georgia, is of great extent and importance, and it is believed that results of value to the profession may be obtained by careful examination of the effects of disease upon a large body of men, subjected to a decided change of climate, and the circumstances peculiar to prison life. The surgeon in charge of the hospital for Federal prisoners, together with his assistants, will afford every facility to Surgeon Joseph Jones in the prosecution of the labors ordered by the Surgeon General. The medical officers will assist in such post mortems as Dr. Joseph Jones may indicate, in order that this great field for pathological investigation may be explored for the benefit of the Medical Department of the Confederate States. S. P. MOORE, Surgeon General.

"Pursuant to his orders Dr. Jones, as he tells us, proceeded to Andersonville, and on September 17 received the following pass:

'ANDERSONVILLE, September 17, 1864.

'To Captain H. Wirz, Commanding Prison:

'*Captain*—You will permit Surgeon Joseph Jones, who has orders from the Surgeon General, to visit the sick within the stockade that are under medical treatment. Surgeon Jones is ordered to make certain investigations, which may prove useful to his profession. Very respectfully,

'By order of Gen. Winder: W. S. WINDER, A. A. G.'

"When we remember that the Surgeon General had been apprised of the wants of that prison, and that he had overlooked the real necessities of the prison, shifting the responsibility upon Dr. White, whom he must have known was totally incompetent, it is hard to conceive with what devilish malice, or criminal devotion to his profession, or reckless disregard of the high duties imposed upon him—I scarcely know which—he could sit down and deliberately pen such a letter of instructions as that given Dr Jones.

"Was it not enough to have cruelly starved and murdered our soldiers? Was it not enough to have sought to wipe out their very memories by burying them in nameless graves? Was it not enough to have instituted a system of medical treatment the very embodiment of charlatism? Was it not enough without adding to the many other diabolical motives, which must have governed the perpetrators of these acts, this scientific object, as deliberate and cold-blooded as one can conceive? The Surgeon General could quiet his conscience, when the matter was laid before him by Colonel Chandler, by indorsing that it was impossible to send medical officers to take the place of the contract physicians on duty at Andersonville, yet could select at the same time a distinguished gentleman of the medical profession and send him to Andersonville, directing the whole force of surgeons there to render him every assistance, leaving their multiplied duties for that purpose. Why? Not to alleviate the sufferings of the prisoners; not to convey to them one ounce more of nutritious food; to make no suggestions for the improvement of their sanitary condition—for no purpose of this kind, but as the letter of instruction itself shows, for no other purpose than that this great field of pathological investigation may be explored for the benefit of the Medical Department of the Confederate Armies."

The denunciations of the Judge Advocate were leveled, not merely against a defenseless prisoner of war, whose papers had been seized, and himself dragged as a witness to this crucifixion of his native land, but they were sweeping in their character, and were designed to arraign the humanity, honesty and intelligence of the Surgeon General and the entire corps of the medical officers of the Confederate Army.

The charge had the desired effect, and was réiterated even by eminent medical men of the North. Thus the son of the Vice President of the United States, Dr. Augustus C. Hamlin, late Medical Inspector U. S. A., Royal Antiquarian, etc., etc., in his *Martyria or Andersonville Prison*, says:

"Here came a medical officer of the highest rank in the rebel army, and one of the most eminent savans of the South, to study the philosophy and physiology of starvation.

"The notes of that fearful clinic are preserved, and may, some future day, startle the scientific world with their clearness, their candor, their positive evidence of the cause of death. Thus the scalpel silences the arguments and reasonings of sophistry."

A similar statement has been made by Dr. Austin Flint, Jr., in his recen work on the *Physiology of Man.*

It was clearly demonstrated in my report that diarrhœa, dysentery, scurvy, and hospital gangrene were the diseases which caused the extraordinary mortality of Andersonville. And it was still further shown that this mortality was referable, in no appreciable degree, to either the character of the soil, or waters, or the conditions of climate.

The effects of salt meat and farinaceous food, without fresh vegetables, were manifest in the great prevalence of scurvy. The scorbutic condition thus induced modified the course of every disease, poisoned every wound, however slight, and lay at the foundation of those obstinate and exhausting diarrhœas and dysenteries, which swept off thousands of these unfortunate men. By a long and painful investigation of the diseases of these prisoners, supported by numerous post-mortem examinations, I demonstrated conclusively that scurvy induced nine-tenths of the deaths. Not only were the deaths registered as due to unknown causes, to apoplexy, to anasarca, and to debility, directly traceable to scurvy and its effects, and not only was the mortality in small-pox, and pneumonia and typhoid fever, and in all acute diseases more than doubled by the scorbutic taint, but even those all but universal and deadly bowel affections, arose from the same causes, and derived their fatal characters from the same conditions which produced the scurvy.

Scurvy and hospital gangrene frequently exist in the same individual. In such cases, vegetable diet, with vegetable acids, would remove the scorbutic condition without curing the hospital gangrene. It has been well established by the observations of Blane, Trotter and others, that the scorbutic condition of the system, especially in crowded camps, ships, hospitals and beleaguered cities, is most favorable to the origin and spread of foul ulcers and hospital gangrene. In many cases occurring amongst the Federal prisoners at Andersonville, it was difficult to decide at first whether the ulcer was a simple result of the scorbutic state, or of the action of the poison of hospital gangrene. So commonly have these two diseases been combined, that the description of scorbutic ulcers by many authorities, evidently, includes also many of the prominent characteristics of hospital gangrene, as will be seen by a reference to the descriptions of Lind, Trotter, Blane and others.

More than two hundred and fifty years ago, Paré described a condition of things similar to that of Andersonville; at the siege of Rouen, the air was so noxious that no wounds would heal, and the besieged finding that all their wounds became gangrenous, reported that the besiegers had poisoned the balls; the besiegers also seeing none but putrid sores in the camp, believed that the wounds were poisoned, and both within and without the city such was the state of the air, and so putrid were all the wounds, that the surgeons could scarcely look upon the sores, or endure the smell; and if they neglected them for a single day, they found them filled with worms

Woodall, in his *Chirurgeons Mate, or Military and Domestic Surgery*, published in 1639, not only carefully describes scorbutic ulcers, but also lays down rules for their treatment; and Gideon Harvey, twenty-four years later, in his "*Venus Unmasked*," mentions superficial, profound, simple, inflamed, callous, dry, sanious, purulent, phagedenick, and gangrenous ulcers, as characteristic of scurvy. This last named author derives the name scurvy from "Scorbeck, and that from Scornobocca, or Fowl mouth, (from Scorno a foul or shameful thing, and bocca the mouth), for a stinking breath and foul rotten gums, may still be termed a foul or shameful mouth; they call it also La marcia di bocca, or putrefaction of the mouth."—p. 24.

The British seamen, in Lord Anson's voyage, and in fact in all long voyages before the mode of preventing scurvy was practiced, suffered terribly from scorbutic ulcers.

Dr. Huxham in his Essay on Fevers, in a chapter in which he discourses on the "disordered and putrid state of the blood," observes that the

"Salt and half-rotten provisions of sailors in long voyages, cause such a sharpness and corruption of the humors that they are rendered almost unfit for the common uses of life, producing great weakness, langour, wandering pains and aches, stinking breath, corroded, spongy gums, black, blue, and sallow spots, sordid, dark, livid fungous ulcers, gangrene, etc., etc. Such scorbutics frequently fall into patecheal fevers, bloody dysenteries, hemorrhages, etc. What is mentioned by the Rev. Mr. Walter in Lord Anson's voyage, is very surprising, viz.; that the blood burst from the wounds of some of the scorbutics after they had been cicatrified for twenty or thirty years. I have known many a ship's company set out on a cruise in high health, and yet in two or three months, return vastly sickly, and eaten out with the scurvy, a third part of them half rotten, and utterly unfit for service. About four or five weeks after they had been out, they begin to drop down one after another, and at length by dozens, till at least scarce half the *compliment* can stand to their duty; particularly I remember some years since, from a squadron under Admiral Martin, we had near 1200 men put on the shore sick at one time, though they went out very healthy and returned in about twelve or thirteen weeks."—p. 47.

Dr. John Hunter, Surgeon of the English Army, in his "Observations on the Diseases of the Army in Jamaica," states that

"Sores and ulcers in the lower extremities, were frequent at all seasons of the year and in all the different quarters were the soldiers were stationed. They, together with fevers and fluxes, amounted to nineteen-twentieths of the sick received into the hospitals, all other complaints not being more than one-twentieth, if particular times be excepted when the dry-belly-ache or small-pox were prevalent. The proportion of sores in the hospitals, though always considerable, admitted of great variation. At Spanish Town and Kingston they were often one third; at Fort Augusta, one-half, at Stony Hill, two-thirds of the whole number in hospital. They arise from the most trifling causes; a scratch, or hurt, or bruise in the lower extremities, are sufficient to produce a sore, which is always difficult to heal, and sometimes impossible. Old sores often break out anew, and prove equally obstinate."

Dr. Lind, in his valuable work on scurvy, has recorded the fact that the slightest bruises and wounds of scorbutic persons may degenerate into offensive bloody and fungous ulcers, which are prone to spread with great rapidity, which are cured with the greatest difficulty. The distinguishing characteristics of scorbutic ulcers, as given by Dr. Lind, are as follows:

"They do not afford a good digestion, but a thin fœtid matter, mixed with blood which at length has the appearance of coagulated blood, and is with great difficulty wiped off or separated from the parts below. The flesh underneath these sloughs feels to the probe soft and spongy. No irritating applications are here of any service for though such sloughs be with great pains taken away, they are found again at next dressing when the same bloody appearance always presents itself. Their edges are generally of a livid color and puffed up with excrescences of luxuriant flesh arising under the skin. When too tight a compression is made, in order to keep these excrescences from arising, they are apt to have a gangrenous disposition; and the member never fails to become swelled, painful and for the most part spotted. As the disease increases, they come at length to shoot out a soft bloody fungus, which the sailors express by the name of Bullock's liver; and indeed it has a near resemblance, in consistence and color, to that substance when boiled. It often rises in a night's time to a monstrous size, and although destroyed by caustics, or the knife (in which last case a plentiful bleeding generally ensues, is found at next dressing as large as ever. They continue, however, in this condition a considerable time without tainting the bone. The slightest bruises and wounds of scorbutic persons degenerate sometimes into such ulcers. Their appearances on whatever part of the body, is singular and uniform; and they are easily distinguished from all others, by being so remarkably offensive, bloody and fungous, that we cannot here but take notice of the impropriety of refering many inveterate and obstinate ulcers on the legs, with very different appearances, to scurvy; which are generally best cured by giving mercurial medicines; whereas that medicine in a truly scorbutic ulcer is the most dangerous and pernicious that can be administered."

In like manner Dr. David Macbride in his "Methodical Introduction to the Theory and Practice of Physic," London, 1772, p. 618, affirms that:

"The slightest wounds and bruises in scorbutic people degenerate into foul and unthoward ulcers. And the appearance of these ulcers is so singular and uniform that they are easily distinguished from all others. Scorbutic ulcers afford no good digestion, but a thin and fœtid ichor mixed with blood, which at length has the appearance of coagulated gore lying caked on the surface of the sore, and is with great difficulty wiped off or separated from the parts below. The flesh underneath these sloughs feels to the probe soft

l spongy, and is very putrid. No detergents nor escharotics are here of any service; though such sloughs be with great pain taken away, they are found again at the next ssing, where the same sanguinous putrid appearance always presents itself. Their es are generally of a livid color, and puffed up with excrescences of putrid flesh aris- from below the skin. As the violence of the disease increases, the ulcers shoot out oft bloody fungus, which often rises in a night's time to a monstrous size, and although troyed by caustics, actual or partial, or cut away with the knife, is found at next ssing as large as ever. It is a good while, however, before these ulcers, bad as they , come to affect the bone with rottenness."

Sir Gibert Blane, in his "Observations on the Diseases of Seamen," af- ns that there is no complaint more hurtful to the public service, by sea d land, and more afflicting to the individual than ulcers.

It is found, says Dr. Blane, in the work just referred to "from direful and multiplied perience, that not only those who are affected with natural symptoms of scurvy, but se who are exposed to the causes of it, and whose constitutions are in such a train as fall into it, are particularly susceptible of ulcers of the most malignant kind, from the allest injury which breaks the skin. This might naturally be expected, from what has n said from the great debility of the fibres, and deficiency of the powers of renova- n and nutrition in this disease. The characteristic symptoms of such ulcers, are, a n, fetid discharge, commonly mixed with blood, which sometimes coagulates on the face. The ulcerated surface is soft and spongy, generally elevated above the level of surrounding skin, particularly about the edges, where there are excrescences of luxu- nt flesh, which in the more advanced state of the ulcer, shoots into a soft bloody fungus, led by the sailors bullock's liver.—*Third Ed., London*, 1799—*p.* 502.

Dr. Blane records a number of important observations showing the ten- ncy to foul gangrenous ulcers amongst seamen. On board the Ganges, seventy-four guns and six hundred men, during the year 1798, the tend- cy to the complaint was such that the smallest sore, whether from a hurt a pimple, fell into the state of an ulcer. Blistered parts were also ected in the same manner. Sores which seemed to be in a healing state uld suddenly become gangrenous. A black speck in the middle was the stant precurser of this. In the most severe cases the ulcers began with lent inflammation, which suddenly terminated in mortification; destroy- g in a short time the fleshy parts, so as to expose the bone, which soon came carious.

The crew of the Triumph, of seventy-four guns and six hundred men, ffered severely from malignant ulcers during the summer and autumn of 08. Not only wounds and blisters fell into the ulcerated state, but a rtch or boils and the orifice of the arm after bleeding, were subject to e same accident. Sores which seemed to be in a healing state, would ldenly and without any visible cause, spread again, and become foul and ody, extremely painful, and would resist every means of cure.

This unfavorable change always began, as in the Ganges, with a black ot in the middle of the ulcer. Ulcers of the same kind prevailed to the st dreadful degree, in the ships serving at the Cape of Good Hope, and the Naval Hospital there, in the years 1796 and 1797. These foul ulcers oduced the most severe and protracted sufferings, terminating frequently the loss of limbs or life, or both. Nor were they confined to the lower tremities, for the ossa-ilium, the *scapula* and *cranium* would sometimes come *carious*. It became frequently necessary to amputate at the hos- tal, and it was observed that if the patients who underwent the opera- n, remained in the wards, with the ulcers, few survived, owing to the ngrenous and ulcerous states of the stumps; but when they were carried to a separate apartment, the large majority recovered.

It was also observed, both in the ships and at the hospitals, where this ecies of ulcer prevailed, that the hands of those who dressed them, where e skin was broken, were attacked by the same sort of ulcer.—*Observa- ns on the Diseases of Seamen*, by Gilbert Blane, M. D.—pp. 506-512.

Dr. Thomas Trotter, in his *Medicina Nautica*, has, in like manner, recorded a large number of instances where malignant gangrenous ulcers have arisen spontaneously in various ships, and attacked with violence, not only external injuries, but in a number of cases, where neither wound, puncture, scab, or contusion could be said to have first taken place, a circumscribed red spot would at first be perceived, scarcely to be felt, but in a few hours rising to a pimple, becoming black in the centre and inflamed around the edges, till it increased in size, swelled and assumed every characteristic symptom of malignant ulcer, with constant fever and subsequent ulceration, slough and fetid discharge. This malignant ulcer or gangrenous ulcer attacked also the flesh wounds made with the lancet in bleeding, for different inflammatory diseases, as catarrhs and sore throats. Contused spots, even where the cuticle was not broken, were not exempted from the general tendency to ulceration. But parts that had been scalded or burnt, above all accidents, most quickly assumed the nature of this horrid sore, spread and inflamed more rapidly, and in the end put on the most formidable appearance; deeper and larger sloughs were the consequence, and symptomatic fever violent in proportion. Even in the early stage, sometimes before the cuticle had burst so as to expose the naked surface, buboes appeared in the groin and axilla, not to be touched without much pain, and always attended with fever. These, however, seldom suppurated; but where they did, they constantly exhibited the complexion of the parent sore. (Medicina Nautica, an Essay on the Diseases of Seamen, by Thomas Trotter, M. D., Sec. Ed., 1804, vol. 2. pp. 169—230; vol. 3d, pp. 497—504).

Dr. Trotter, in the third volume states that in the summer of 1799 the malignant ulcer made its appearance on board the Temeraire, with all the characteristic symptoms and violence which marked it in other ships. Every wound, abrasion of the cuticle, blistered part, scald or burn, passed rapidly through the various stages of inflammation, gangrene and sphacelus; in a few days leaving the bones almost bare, from the separation of immense sloughs.

The tendency of the bones to *caries* after inflammation in this disease, was more frequent than any other species of ulcer, and in many cases rendered the cure very tedious and painful; and many cases sank under the long confinement necessary to the separation of the dead bones.

Dr. George H. B. Macloed, in his "Notes on the Surgery of the War in the Crimea," states that

"The French suffered most dreadfully from hospital gangrene in its worst form. The system they persued, of removing their wounded and operated cases from the camp to Constantinople at an early date, the pernicious character of the disease, tended to render it fatal when produced. Many of their cases commenced in camp, but the majority arose in the hospitals on the Bosphorus, where the disease raged rampant In the hospitals of France it also prevailed, and, from what M. Lallour, Surgeon to the Euphrate transport, tells us in his paper on the subject, it must have committed great ravages in their ships, from one of which he says, sixty bodies were thrown over during the short passage of thirty-eight hours to the Bosphorus. With them the disease was the true gangrene, and attacked not only open wounds but cicatrices, and almost every stump in the hospitals."

By the official reports of the Medical officers of both the English and French Armies, during the Crimean war, it was conclusively shown that, nothwithstanding the extraordinary exertions of these powerful nations, holding undisputed sway of both sea and land, scurvy and a scorbutic condition of the blood, increased to a fearful degree the mortality, not only of gun-shot wounds, but of all diseases, and especially of pneumonia, diarrhœa and dysentery.

We might add many other facts from various authors establishing the spontaneous origin of malignant spreading gangrenous ulcers, in many

ries and armies, as the result of scurvy and crowding; but the facts just orded are sufficient to show that the foul scorbutic ulcers, and hospital grene, and the accidents from vaccination, arising at Andersonville, e by no means new, in the history of medicine, and that the causes ch induced these distressing affections have been active in all wars and es, and amongst all armies and navies.

h truth these men at Andersonville were in the condition of a crew at confined upon a foul ship, upon salt meat and unvarying food, and hout fresh vegetables. Not only so, but these unfortunate prisoners e like men forcibly confined and crowded upon a ship, tossed about on ormy ocean, without a rudder, without a compass, without a guiding , and without any apparent boundary or end to the voyage; and they ected in their steadily increasing miseries, the distressed condition and ing fortunes of a devasted and bleeding country, which was compelled, ustice to her own unfortunate sons, to hold these men in this most dis- sing captivity.

he Federal prisoners received the same rations in kind, quality and unt, issued to the Confederate soldiers in the field. These rations were, ng the last eighteen months insufficient, and without that variety of h meat and vegetables, which would ward off scurvy from soldiers, as as prisoners.

s far as my experience extended, no body of troops could be confined usively to the Confederate rations of 1864 and '65 without manifesting ptoms of the scurvy.

e Confederate ration grew worse and worse as the war progressed, and portion after portion of the most fertile regions of the Confederate es were overrun and desolated by the Federal Armies. In the straight- condition of the Confederate States, the support of any army of fifty sand prisoners, forced upon their hands by a relentless policy, was a t and distressing burden, which consumed their scant resources, bur- d their rotten lines of railroad, and exhausted the over-taxed ener- of the entire country, crowded with refugees from their desolated es. The Confederate authorities charged with the *exchange of prison- ers* used every effort in their power consistent with their views of national or and rectitude, to effect an exchange of all prisoners in their hands, o establish and maintain definite rules by which all prisoners of war t be continuously exchanged as soon as possible after capture.

hatever the feelings of resentment on the part of the Confederates may have been against those who were invading and desolating their ve land, which had been purchased by the blood of their ancestors fr the Indians and English, the desire for the speedy exchange and re- of the great army of veterans, held captives in Northern prisons, was ast and universal; and this desire for speedy and continuous exchange on e part of the government, as well as on the part of the people, sprang not merely from motives of compassion for their unfortunate kindred and fel -soldiers, but also from the dictates of that policy, which would ex- ge on the part of a weak and struggling people, a large army of pris- (consumers and non-combatants), requiring an army for their safe- ng), for an army of tried veterans.

art from the real facts of the case, it is impossible to conceive that overnment in the distressed and struggling state of the Confederate s, could deliberately advocate any policy which would deprive it of a army of veterans, and compel it to waste its scant supplies, already icient for the support of its struggling and retreating armies.

l the result has shown that the destruction of the Confederate Gov- nt was accomplished as much by the persistent retention in captivity

of the Confederate soldiers, as by the emancipation and arming of Southern slaves, and the employment of European recruits.

And still farther to show that these accidents attending vaccination Andersonville were active in Northern prisons, we quote the testimony medical officer who occupied during the war a distinguished position in Medical Department of the United States Army.

Dr. Frank Hastings Hamilton, late Lieutenant-Colonel, Medical Insp tor, U. S. A., in his "Treatise on Military Surgery," records the foll ing facts, which have an important bearing upon the subject un consideration:

"In still further confirmation of the correctness of our views, we will mention tha many of the regiments stationed in Kentucky and Tennessee during the summer of 1 all slight wounds, such as scratches, slight burns, etc., took on an ulcerative action, often became ugly and intractable sores. Vaccination almost constantly produced same results, and was in many cases followed by abscesses in the axillary, cervical other glands.

"Upon the evacuation of Murfreesboro by the Confederate Army, on the first of Ja ary, 1863, 1673 sick and wounded soldiers were left on our hands; of these 250 were s and 1423 were wounded. The whole number were placed in charge of Dr. Avent, intelligent Medical Director of General Bragg's army, assisted by several other Con erate surgeons, and were allowed to remain in the buildings which they had origin taken as hospitals, and which were the best the place afforded. On the twentiet May, 1863, nearly five months after the battle of Stone's River (Murfreesboro), Dr. Av reported to us that 640 of these men had died, and 55 remained in the hospital, the mainder having been sent off for exchange. The ratio of deaths, continues Dr. Av allowing the same percentage for the 55 now on hand, is about 38¼ per cent. I have separated the sick in this calculation from the wounded, from the fact that the hospi were common to both; consequently I have no positive data on which to make an e mate of the relative mortality. I am satisfied, however, that the mortality amongst sick has been much less than of the wounded. An estimate, placing the percentag the wounded at about 40, I think would not be far wrong; which loss, you will disco is unprecedented in any previous battle between the present belligerents.

"In explanation of this great mortality after wounds, Dr. Avent proceeds to offer eral facts, namely: overcrowding of the patients in the hospital buildings, mental pression, the fact that only the most severely wounded were left behind; but he gi especial prominence to the physical condition of the men, in consequence of a prolon absence in their food of anti-scorbutic articles, both before and since their capture."

We have here a far heavier mortality amongst these Confederate pris ers than amongst the Andersonville prisoners; and according to the p lished statements of the United States Government, the majority of deat during the war was largely on the side of the Confederate soldiers confin in Northern prisons. And after careful inquiries amongst returned C federate prisoners, I am convinced that the accidents attending vaccinati were quite as numerous and severe in Northern prisons as in Souther and the causes of death amongst prisoners in both sections were not m terially different, with this exception, that the heat of the Southern Sta was balanced by the effects of severe cold upon feeble scorbutic men wi insufficient clothing.

We have dwelt thus long upon this subject, because we have consider its discussion of paramount interest in the history of vaccination, and the medical profession in America.

In many cases, occurring in the Confederate Army, the deleterious effe of vaccination were clearly referable to the condition of the forces, and t constitution of the blood of the patients, for it was observed in a numb of instances that the same lymph from a healthy infant, inoculated up different individuals, produced results corresponding to the state of t system; in those who were well-fed and robust, producing no ill effec whilst in the soldiers who had been subjected to incessant fatigue, exp ure and poor diet, the gravest results followed.



Fig. 91: *Arm of Federal Prisoner. Hospital Gangrene. Attacked, small abrasion near elbow. Amputation—Death. Andersonville, Georgia, September* 20, 1864.

From Nature by
JOSEPH JONES, M. D.

THE NEW ORLEANS LITH Co 10 UNION ST

As this subject is of vast importance in its relations to the theory and ctice of vaccination, and in its bearing upon the fair name and honor of American Medical Profession, we have substantiated the statements by following illustrations, drawn from nature:

late 22, Figure 91—Arm of Federal prisoner, attacked by hospital grangene, in military prison, and transferred to the military prison hospital. The gangrene at- ted a small abrasion or scratch near elbow joint. The arm was amputated about way between the elbow and shoulder joints. Hospital gangrene attacked the ampu- on, and death resulted from exhaustion and septic poisoning.

he following is the official report of my testimony, with reference to vaccination of eral prisoners at Andersonville, delivered in the *Military Court* at the "*Trial of Henry z:*"

By counsel—Q. Did you say anything about vaccination in your report?

A. I saw some cases of injury from vaccination. I do not recollect exactly what I ed in my report on that subject, but I can tell you what I did by referring to it. re were a number of instances, I think some dozens of instances, that I was informed I did not see more than one or two instances myself; they occurred previous to my g there. The case which I examined more particularly was a case of amputation of arm from vaccination, and upon carefully examining it, I was led to believe that it in consequence of the condition of the system of the man, rather than from the mat- introduced, from the fact that severe injuries were frequently attended with gan- e in that foul atmosphere.

From the crowded condition, filthy habits, bad diet, and dejected, depressed condi- of the prisoners, their systems had become so disordered that the smallest abrasion he skin, from the rubbing of a shoe, or from the prick of a splinter, or from scratch- or a musquito bite, in some cases, took on rapid and frightful ulceration and gan- e." (*Fortieth Congress, Second Session, House of Representatives.* Ex. Doc. No. 23, AL OF HENRY WIRZ. Letter from the Secretary of War *ad interim*, in answer to the lution of the House, April, 16, 1866, transmitting a trial of Henry Wirz, December 7, . Referred to the Committee on the Judiciary and ordered to be printed. P. 642, 25.)

he following is the record which I made on the Confederate Military Prison Hospital ndersonville:

he drawing, Plate 22, Figure 91, was made by myself from the arm of a Federal pris- r, who had scratched and abraded the skin around the bite of some insect, most prob- that of a mosquito, inflicted in the stockade.

he abrasion did not heal, but gradually assumed a dark, unhealthy hue; and the irri- on commenced to spread. In two weeks it had reached the size of a silver half-dol- This patient was then transferred to the Confederate States Military Prison Hos- l, and in the course of six days it reached the size and presented the appearance esented in the drawing (Plate 22, Figure 91). When I examined this patient the con- utional symptoms were well marked—hot, dry skin; small, rapid, feeble pulse; len, sallow, unhealthy hue of complexion; dejected, distressed countenance; coated tremulous tongue. The stench emitted from this gangrenous mass presented a ged, pulpy, putrescent mass, without pus, and with ragged, everted edges, elevated ve the surrounding tissues. It was also surrounded by a livid blue and deep purple ler on the skin. The deep blue and purple areola is a sure index of the spread of pital gangrene. The patient was most urgent in his entreaties for the removal of the , and it was decided, upon consultation with the attendant medical officers, that his dition could not be rendered worse by an amputation, which would substitute a ller flesh wound for this most extensive and foul ulcer, invading the joint and excit- intense pain.

otwithstanding the probability that in the condition of the system of the patient, in foul atmosphere, the gangrene would return again in the stump, it was, neverthe- , considered proper to amputate, on account of the reasons just given.

umerous amputations had been performed in the Confederate States Military Prison gangrene supervening upon slight injuries, and attacking scorbutic ulcers. I en- vored to collect all the cases with the results, but the records were imperfect and in- plete. Upon the incomplete reports, 266 cases of hospital gangrene were recorded; of sixty-six amputations in consequence of the disease with twenty-five deaths; one dred and two cases are given as supervening upon gun-shot wounds, and the remain- were reported as gangrenous ulcers arising from the scorbutic and deranged condi- of the system.

welve cases of gangrenous ulcers were recorded as following vaccination.

hese figures are far below the truth.

any cases of gangrenous ulceration which were in the hospitals, were originally en- d upon the hospital registers under the head of scurvy, diarrhœa, dysentery, or some r disease.

Hospital gangrene returned almost invariably after amputation in these scorbutic and enfeebled patients, and in this infected atmosphere; and in some cases the disease reappeared in the stump within thirty-six hours after the operation.

I extract the following from a report on hospital grangrene at Andersonville Prison drawn up by Assistant Surgeon A. Thornburgh, of the Confederate Army, in response to my official request:

"Early in the spring (1864) small-pox made its appearance in the prison, and as a prophylactic measure, we were ordered to vaccinate all who could not show the proper vaccine scar; consequently we went to work, and in a week or ten days two or three thousand were vaccinated. Out of this number, nearly every prisoner who happened to be affected with scurvy was attacked with ulceration of the pustule. These small ulcers soon began to slough, and extend over a large extent of surface; when the superficial sloughs were separated, the parts beneath were found to be in an unhealthy, sloughing condition; finally these ulcers would become phagedenic, and destroy every structure in their track for a considerable extent. In this condition gangrene would set in, and if the disease was not speedily arrested by powerful escharotics, emollient poultices, and the proper vegetable diet, amputation became necessary, or the poor sufferer sank under this irritation. Diarrhœa and dysentery frequently supervened, and speedily destroyed the patient."*

That exposure, hardship, improper and scant and salt food had produced a similar condition in the Confederate troops is conclusively shown, by Plate 23, Figure 92. Leg of J. S. Cole, private Third Regiment, Georgia, Reserves; guarding Federal prisoners at Andersonville, Georgia, September 22, 1864, while guarding the stockade, hospital grangrene attacked some abrasions of the skin on the right foot and leg.

The following is the detailed statement of this case:

"Case 54.—General Hospital for Confederate soldiers, Andersonville, Goorgia, September 22, 1864. Thomas Cole, private 3d Regiment, Georgia Reserves, Company H. Age sixteen years; height, five feet nine inches; weight in health, 150 pounds. Arrived at Andersonville on the twentieth of July. Was engaged in guarding prisoners at the stockade. Performed guard duty every third day; two hours on and four hours off, during the twenty-four hours. Before leaving home, received a slight scratch on the side of the left foot, a little below the ankle. This boy did not usually wear shoes at home, and on the way to Andersonville the shoes bruised and enlarged the small injury. This small abrasian did not heal after the commencement of his duties as a soldier at Andersonville.

It did not, however, give him any special trouble, or appear inflamed, until about the first of September, forty-two days after his arrival at this post.

Up to this time this young recruit had never been inside the stockade, and had never stood guard around or within the hospital. On the fourth of September, the patient was compelled to quit duty and on the twelfth instant he was transferred to the Confederate General Hospital.

At the time of his entrance into the hospital, the gangrenous spot was not larger than a silver half dollar, and presented an inflamed areola on the sound skin, elevated, everted edges, and elevated pulpy, ragged greenish central mass.

Up to the date of making the drawing, the gangrene has spread rapidly, presenting the appearance represented in Plate 23, Figure 92.

Hemorrhage was constantly taking place from the numerous small eroded vessels, and hence the red and mattlered appearance of certain portions of the gangrenous mass. Several smaller gangrenous spots were visible upon the leg and are represented in the figure. These are said to have arisen spontaneously; that is without any preceding abrasian or injury. The black mass in the centre of the large ulcer upon the ankle joint, appeared to be the surface of the necrosed bone.

The constitutional symptoms were well marked in this case. At night when I examined the patient he had hot fever, with rapid pulse, pale aneamic, sallow, unhealthy complexion. This morning has less heat of surface, and the pulse is less frequent, but still there is febrile excitement, and he is very nervous and weak; cries like a child when his wound is touched, even in the gentlest manner. Bowels loose; had a large, loose, yellow, very offensive evacuation whilst I was engaged in executing the sketch.

Plate No. 24, Figure 93: Hand of W. J. Black, Confederate soldier, poisoned in dressing, hospital gangrene, October 3, 1864.

The following record of this case was made by myself during the investigations on hospital gangrene, instituted in the Empire Hospital, Vineville, Georgia:

*Surgical Memoirs of the United States Sanitary Commission. Investigations upon Hospital Gangrene as it prevailed in the Confederate Armies, 1861-1865, by Joseph Jones, M. D., formerly Surgeon in the Provisional Army of the Confederate States. New York, 1871; p. 528.

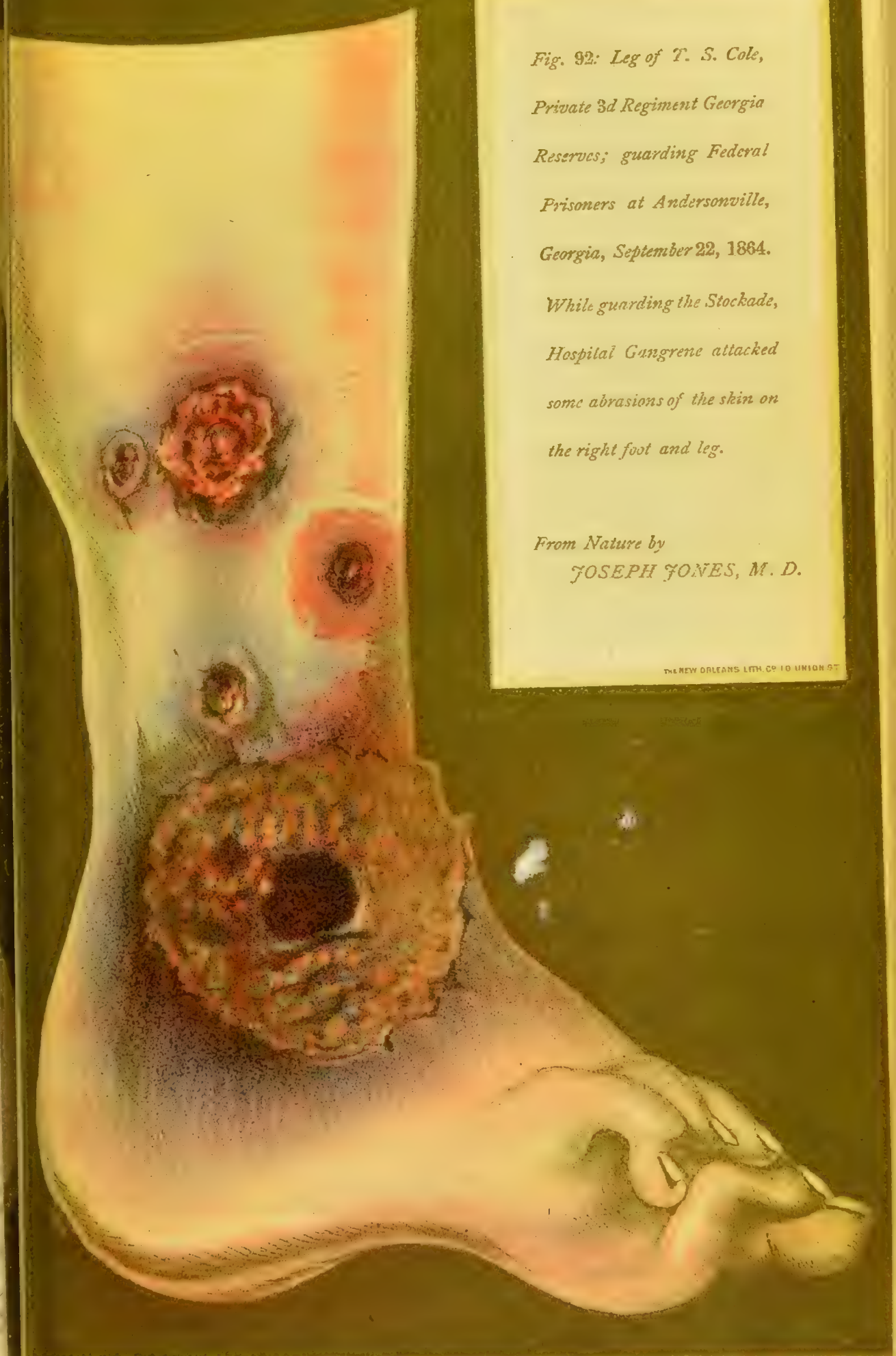


Fig. 92: Leg of T. S. Cole, Private 3d Regiment Georgia Reserves; guarding Federal Prisoners at Andersonville, Georgia, September 22, 1864. While guarding the Stockade, Hospital Gangrene attacked some abrasions of the skin on the right foot and leg.

From Nature by
JOSEPH JONES, M. D.

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se 7, Empire Hospital, Vineville, Georgia. W. J. Black, Company "G," Lee's In-
i Battalion; aged forty-six years Native of Troup county, Georgia. Farmer by
pation. Height, 5 feet 9 inches; weight, in health, 160 pounds; black hair and
; florid complextion. Has been in Confederate service three years and three months.
ed two years with "Stonewall" Jackson. Was wounded about one year ago in
land; lost the first joint of the second finger, and has not been in field service since.
been acting as a nurse in this hospital for the past two months, since the conversion
is hospital into a gangrene hospital.

ring this time has been inoculated with hospital gangrene twice. The first attack
caused by a prick of a pin on the side of the hand, received in dressing a gangrenous
nd. The prick of the pin became painful almost immediately, and in the course of
days the injury commenced to inflame, and the surface around assumed a purplish
bluish color. The disease spread from the centre of infection, and the slough pre-
d a grayish and greenish color. The inflamed and gangrenous parts were freely
rized with strong nitric acid. By this means the gangrene was arrested before the
had exceeded one-quarter of an inch in diameter. This occurred in the beginning
ptember, about one month before the drawing was made. The constitution did not
ar to suffer, the wound healed readily, and the patient resumed his labors as a nurs-
e gangrene patients.

d not been engaged in dressing the gangrenous wounds more than two or three days
e a small blister appeared on the third finger of his right hand, which gave much
and in the language of the patient "throbbed as if a bone was breaking loose."
blistered surface assumed a gray and greenish color, and was surrounded with a
lish and blue halo in the skin. The gangrene commenced to spread rapidly. Con-
ated nitric acid was immediately applied three times a day, but it did not arrest the
rene.

appears that in the first inoculation, the system was not specially involved, and the
treatment arrested the disease. But the continued residence in this infected at-
here, and the constant attention upon the gangrenous wounds, gradually
ned the system of this faithful nurse to such an extent, that in the second attack the
treatment did not arrest the disease.

the third of October, 1864, just twelve days after the commencement of this second
k of hospital gangrene, I executed the drawing (Plate 24, Figure 93).

gangrene is progressing along the upper border, under the bluish discolored skin
e third finger of the right hand. The color of the skin in this portion of the wound,
e the gangrene is progressing most rapidly, was of a most remarkable deep blue.
ower portion of the ulcer appears to be improving somewhat, and now discharges
le pus.

constitutional disturbances, notwithstanding the comparatively small surface in-
d, are well marked, pulse accelerated and feebler than in health. Face flushed.
ng the execution of the sketch of his right hand, suffered much pain from the con-
position of the hand; was very restless and nervous, and was much nauseated, and
pted several times to vomit. Hands tremble from the nervous exhaustion. No ap-
e. Tongue of a purplish, bluish, leaden color. Has fever in the morning, which
es toward the evening. Feels weak, nervous, feverish and depressed. Urine
nish red and scant.

the seventh of October, gangrene still spreading. Patient sent out of Hospital
he country.

he history of vaccination in the Army of Virginia, under General Lee,
of great interest, in the light which it threw upon these questions, and
with deep regret that we learn that all the most valuable field reports
destroyed.

he following letter from Dr. L. Guild, formerly Medical Director of the
y of Northern Virginia (General Lee's Army), was received in reply to
equest, for the experience upon this subject, of this surgeon, who had
one of the most responsible and distinguished positions in the Medical
artment of the Confederate Army.

MOBILE, ALA., Decembe 12, 1866.

ssor Joseph Jones:

r Sir—Your letter of the fifth inst., has been received. It would afford me great
ure to contribute to your contemplated monograph on "Spurious Vaccination,"
the retreat of the Army of Northern Virginia from Petersburg to Appomattox
-House, all of the retained papers, professional notes, reports, etc., of my office
ither destroyed by the enemy or burned, with other baggage, by our own people
e purpose of lightening our trains, and facilitating the movement of our retreating

columns. When the boxes were burned their contents were, of course, unknown to tho entrusted with the execution of the order. On account of this unfortunate occurrenc I have nothing with which to refresh my memory accurately, in a single case, out of vast number that came under my observation.

The subject of transmission of syphilis through the vaccine virus is a most interestir and important one to the profession—admitting great diversity of opinion, and, as yo truthfully remark, "one well-reported case is worth volumes of mere opinions and asse tions"

I know of no one who could report such a case, but much useful information on t subject can be furnished by Dr. R. J. Breckinrigde—now of Houston, Texas—formerly Louisville, Ky. He was one of the Medical Inspectors of the Army of Northern Virgini and it was his duty, on several occasions, to collect all interesting facts and opinions the subject, such as the nature and character of the ulcers following vaccination, anteri history of patients, effects of treatment constitutional and local; etc., etc.

I regret my inability to furnish something worthy of your consideration

Respectfully, yours, etc., L. GUILD.

The testimony of Dr. S. E. Habersham, upon this cause of the abno mal phenomena accompanying and following vaccination, is clear and in portant.

The following report was placed in my hands by its author, and was a companied with the following answer to my request and inquiries:

SUMMERVILLE, April 28, 1866.

Dr. Joseph Jones:

Dear Sir—The accompanying report of an anomalous disease or the result of va cination, was written shortly after its first appearance in the Army of Northe Virginia, and after a careful study of the cases especially assigned to the hospit under my charge for "treatment and report." At the time there was much discu sion among the medical staff, both in field and hospital, as to the ætiology and patholo of the manifestation which by some, and, indeed, most of the observers, was attribut to impure virus, and especially syphilitic inoculation. This latter opinion was ingen ously advocated by Surgeon Breckinridge, and no doubt many cases may have result from such an accident. In none of the cases, however, assigned to my division of Chi borazo Hospital, could I discover a sufficient number of symptoms to lead me to suppo that such might have been the cause, either in its prodoma or development, hence I cou not attribute the cause of the eruption to any other than that assigned in the repo This view as to its ætiology was subsequently very ably maintained by Surgeon Fra A. Ramsey, in a report referred to me by Surgeon-General Moore, and which was pr served among my papers, but lost at the time of the evacuation of Richmond, togeth with the history of all the cases, and diagrams intended to illustrate the above repo In consequence of the loss of these papers, this report is not as perfect as it should b but I hope the general description and history of the disease is sufficiently clear and co prehensive to embrace everything of practical importance concerning this horribly di gusting and filthy accident, or result of vaccination, as seen in our army.

Since the termination of the war, I have had several opportunities of conversing wi a few intelligent surgeons of the Federal Army, and ascertained from them that such disease had appeared among their soldiers in regions of country where the scorbutic di thesis manifested itself among the troops, and to which the disease was generally attri uted by them, though there were also surgeons of that army who attributed it to syphi itic inoculation. I find the same view as advanced in the accompanying report held most of the Surgeons of the Federal Army, as stated in Circular No. 6, Surgeon-General Office, United States Army, November 1, 1865.

If you think my report of sufficient importance to appear upon the pages of yo journal, or if it can in any way advance the cause of medical knowledge, you are at pe fect liberty to make use of it for that purpose.

With much respect, I remain, very truly, your obedient servant,

S. E. HABERSHAM.

Report on Spurious Vaccination in the Confederate Army. By S. E. Habersham, M. D Surgeon in the Provisional Army of the Confederate States:

CHIMBORAZO HOSPITAL, Division No. 2, November, 1863.

To Surgeon W. A. Carrington, Medical Director:

Sir—I have the honor to inform you that, in accordance with your order of the twent ninth June, 1863, I have received all the patients sent into this Division, with a "peculi eruptive disease," supposed to be the consequence of vaccination, and herewith forwa you the results of my investigation in this anomalous affection.

In compliance with an order issued from the Surgeon General's office, in the month November, 1862, general vaccination was practiced upon all soldiers as soon as they we admitted in this Division, and in order to insure the full protective influence of vaccin



Fig. 93: *Hand of Confederate Soldier, poisoned by prick of pin—in dressing Hospital Gangrene. W. J. Black, C. S. A., October* 3*d*, 1864.

From Nature by

JOSEPH JONES, M. D.

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n (not anticipating any evil consequences therefrom), the order was strictly obeyed, l all the patients, even those having recent scars upon them, were re-vaccinated. A days after the insertion of the virus, and, in many cases, within twenty-four hours, seat of punctnre became very much inflamed, with a deep inflammatory blush around which gradually implicated, in the severe cases, nearly the whole of the affected b. A pustule rapidly formed, instead of a vesicle, which very soon discharged an ich- us fluid. This fluid was, in the course of forty-eight hours, converted into a dark, hogany-colored irregularly-shaped scab, prominent, and firmly attached at its base. ark-red areola of several lines in diameter, measuring from the edge of the scab, was n developed, which, in turn, seemed to exude an ichorous serum. This was soon con- ed into a scab surrounding in juxtaposition the first, and presented the appearance single scab. This process continued for several days, and there was often formed a , one inch or two and a-half in diameter. "Pari passu" with the increase of this , the erysipelatous blush on the limb diminished, and when the blush had disap- red, this scab ceased to enlarge. As this inflammatory process subsided, the dis- ge lost its serous character, and seemed to be converted into pus, which exuded from er the scab, loosening its firm attachment at its base, and thus rendering it liable to emoved prematurely by the patient in his sleep, or even by the friction of his cloth- When this occurred, a foul bleeding, irregularly-shaped phagadenic ulcer was re ed, with everted edges, and presenting the appearance of a syphilitic phagedenic- r, involving the subcutaneous areola tissue, exposing, in many cases, the muscuiar ue below. The process of destruction of parts did not end here, for the ulcer contin- to increase, and from the loosened edges an ichorous discharge continued to pour from under the skin which seemed to destroy the edges of the ulcer, thus increasing imensions. Wherever the ichorous pus from this ulcer touched the sound skin, an- r pustule of a similar character was formed, in some cases reaching the size of the ary sore. This, however, was seldom the case, but a smaller ulcer generally re- ed, which often healed and cicatrized before the first.

e axillary glands, when the arm was affected, and the inguinal glands, when the le was the seat of the disease, sometimes became inflamed and discharged pus, pre- ing the microscopic character of healthy pus. This enlargement of the glands, ever, did not occur in a sufficient number of cases to make it a natural sequence of disease. Attending the early stages of the formation of the ulcer, before pus was charged, there was always more or less pyrexia, with furred tongue and loss of appe- these symptoms disappearing as soon as ulceration was established. In these ly aggravated cases, successive crops of pustules made their appearance on the af- d limb, often developing themselves also upon the lower limbs of the affected side, seldom crossing the mesian line, and never developing themselves ubon the trunk or .

e less malignant form of the disease resembled the first in character, but not in de- For a few days after the insertion of the virus, merely a small inflamed spot was rned, which seemed to be more the result of the injury done to the skin, by the prick e lancet, than any inflammatory action resulting from a specific cause. About the fifth xth day a minute pustule was discerned upon a scarcely larger inflamed base. This ule and areola gradually increased, but the diameter of the areola was not as great, there was no deep inflammatory blush upon the arm, merely a diffused redness of al inches in diameter. The same process, however, took place—an exudation of n from the areola—which, in turn, became a crust, and which gradually increased in but it never reached the diameter of the more malignant type; and when it was de- d by the process of ulceration, which occurred at an early period, the revealed was neither as deep nor as malignant in its appearance. The edges were not everted, here was no discharge of pus from under the edges of the ulcer; it only presented ppearance of an ordinary ulcer, showing no tendency to increase, and but little to Pyrexia very seldom attended this form, nor was the appetite impaired.

third and mildest form of the disease made its appearance as a small pimple, in two to ten days after the introduction of the virus, and which gradually formed a ule; a dark brown scab succeeded in from three to four days, which remained attached times as long as two weeks, and when it become detached, a livid or brown spot was led, the size of which was equal to the scab. This scar, however, was very sensi- o the touch, and liable to bleed from the least friction of clothing, and when this red, it would exude serum or blood, and another scab would surely form. If the m became suddenly depressed from any cause, it would almost always assume the ative process, and become a sloughing ulcer, which only healed with the general ovement of the system.

thus described, this disease has prevailed in the Army of Virginia, both in field and tal. The surgeons of the Army of the Southwest report its prevalence there. It eveloped, in the early part of the year, in a cavalry regiment in the mountains of nia, the Colonel commanding suffering severely from the disease. In every case its n has been traced to the introduction of vaccine virus into the system. How far an

epidemic cause may have exerted its influence in its early development it is impossible even to surmise; we know, however, that it originated in Virginia, at a time when our Army was upon very short rations, and that many of the soldiers sent from the field at that time presented a decidedly scorbutic appearance. Many had been reduced and were broken down by exposure to the inclemency of a cold winter, and the depressing influences of low diet, want of clothing, and many other prolific causes of disease, calculated to deprive the blood of its healthy constituents, particularly of its fatty matter. Hence this may have produced a predisposition. In verification of this fact, I will state, that when it was found how frequently the disease in consideration supervened upon vaccination in this hospital in broken-down and depraved constitutions, it was deemed prudent to postpone the introduction of the virus until the patient was restored to a healthy condition by improved diet and medical treatment. At the first appearance of the evil consequences of vaccination I was inclined, with other surgeons, to believe that the virus was impure, and, because of this suspicion, I threw away the matter we then had, and obtained a vaccine scab from Dr. Knox, a practitioner on Church Hill, who assured me he had used it in several cases with a perfect result.

The introduction of this virus into the arms of some ten patients resulted in the development of the disease in question in three of them, while in the remainder it produced apparently a true pustule. From this fact, and the immunity which healthy looking men enjoyed, I was led to believe that the predisposing cause existed in a vitiated and impoverished condition of the blood, and so reported in my first report, and that the introduction of pure virus into the system was the exciting cause of a latent disease. This view, I see, is also held by Surgeon Frank A. Ramsey, of the Department of East Tennessee, in a communication on file in office of Surgeon General. This view I have never had reason to change, though I am aware that many men, apparently in health, have suffered from the effects of vaccination.

In one case, which I here quote, the influence of a good condition of the general system seems to have exerted a wonderfully modifying influence.

Case No. 29.—J. L. Turner, a private, Company G, Fifth Virginia Cavalry, aged 27, married, parents healthy—he himself enjoying good health—never had any venereal disease. Entered the service, April, 1861—has been in service ever since, was vaccinated about a month ago, when in hospital at Farmville.

This patient, Turner, was vaccinated last winter by Assistant Surgeon Vaiden, of this division. It not having any effect upon his system, and feeling assured from this and previous vaccinations that he was proof against the effect of it, he insisted upon being vaccinated by Assistant Surgeon Moses, from the effects of which he has suffered since, and for which he was on the eighth of September admitted to this hospital, presenting the following appearance: A number of pustules, resembling impetigo, on left arm and leg, which were developed in successive crops, appearing as soon as the original pustule began to heal. This was a remarkably mild form of the disease, and was improving on cod liver oil, when he was furloughed on the twentieth of September, being a paroled prisoner. This patient was young, vigorous and comparatively healthy when he received this vaccine into his system.

The search, for parasitic or cryptogamic vegetation, with a good microscope, revealed none. The pustule was seldom developed where parasites make their habitation, namely, in the bulbs, or at the roots of the hair. The pus presented microscopic characteristics of pus globules floating in a homogenous fluid. These globules were not as abundant as in laudable pus, and not so distinctly nucleated, and were irregular in outline in some of the cases examined. This appearance of globules, however, often exists in healthy or laudable pus, when it has been exposed to air any length of time. In the many cases I have examined, I have yet to find a patient who will acknowledge that he has had any syphilitic disease at any period of his life, though many of them have had gonorrhœa. This exemption from syphilis, however, is not strange, since it is a very uncommon disease in the rural parts of our country, the inhabitants of which comprise the very large majority of our army. We also know that the tendency of the secondary form of syphilis is to develop itself in the forehead, chest, back, and trunk, generally, and yet no cases, developed upon these parts of the body, have presented themselves to my observation. Many of the patients, also, have suffered long enough to have had the tertiary form of syphilis, developed nodes, etc., and yet no such symptoms have been seen by me.

From what I can learn, the Army of the United States has so far escaped these evil results of vaccination. A few cases, however, originated among the Federal officers in the hospital of Libby Prison, who were vaccinated in the prison by one of their surgeons from his own arm, some weeks after their confinement, which presented all the characteristics of the disease as it has appeared in our army. I was assured by these officers that they had neither seen or heard of such a result of vaccination in their army. Does not this fact alone lead us to infer that its cause of origin may be traced to some abnormal condition of the blood, in these cases, induced by confinement in a vitiated atmosphere, without the means of eliminating the *materies morbi* from the system by exercise and care to the function of the skin.

The classification of this disease is difficult and unsatisfactory, since it commences as a pustule, and assumes often the outward form of rupia, which, by all dermatologists, is classified among the bullæ. If we classify it among the pustulæ, we find no disease there describing it accurately, some cases resembling ecthyma, others impetigo. Inasmuch, however, as it oftener assumes the characteristics of chronic etchyma, either in a mild or aggravated form, according to the healthy or unhealthy condition of the patient, I propose to name it vaccine ecthyma. Like all chronic cutaneous diseases, it shows a decided tendency to return whenever the system becomes reduced from any cause, or when the patient is exposed to causes which produce an undue action in the circulation of the capillary system. An undue amount of exercise in warm weather seems to excite its appearance. This was illustrated in those soldiers supposed to be thoroughly cured, and who were about to be ordered to their regiments for duty, when a raid was threatened, in the month of July, upon the city of Richmond. These men were among the volunteers from the hospital to defend the city, and were marched through a hot sun some four miles to the lines at the extreme limits of the western end of the town. They returned with a new crop of pustules, which, however, healed by resolution in a short time.

Treatment—There is every reason to believe that the disease results from a blood disease, only to be eliminated from the system by enriching the blood and supplying its deficiency of fatty matter with rich nutritious food, and by the judicious use of alteratives. It is in vain to treat the ulcers locally, for without alterative treatment with nutritious diet, all the local applications which were tried seemed to aggravate rather than improve them; but as soon as the general condition began to improve, so did the ulcers. The milder cases began to improve a few weeks after admission without any treatment, except dietetic, in conjunction with the iodide of potash, syrup iod. ferri, and sarsaparilla; in others, merely applying simple dressing to the ulcers, was found sufficient to subdue it. Under this treatment all the cases gradually but slowly improved. In the early part of August we received a large supply of cod liver oil, and I was thus enabled to test fully the treatment which the supposed cause of the disease naturally suggested. Some few of the patients could not digest the oil, but those who could began rapidly to improve, and many were able to return to their regiments, whilst others were thought well enough to be transferred to their respective State hospitals, in compliance with an order issued at that time. Those who were unable to digest the oil continued the syrup iod. ferri, which was thought the best alterative indicated in their cases. Their improvement was scarcely perceptible. In the early part of September, however, another effort was made by them to take the cod liver oil, which they were enabled to do in a little whisky; their improvement soon became very evident to themselves, and, though not entirely well, the ulcers are rapidly granulating. No new pustules are being developed, and the patients are in a fair way to recover. I have no doubt that the best remedy has been found in the cod liver oil; and this, locally applied and internally administered, with an entire change of air and nutritious diet, will remove and eventually eradicate this obnoxious and filthy disease from the system.

From the above mentioned facts I am led to draw the following conclusions: That the disease is pustular at its first appearance; that it resembles ecthyma in its general character; that it is but a local manifestation of a general disorder, or vitiated condition of the blood; that this vitiated condition resulted from improper and spare diet, together with inattention to cleanliness, thus impairing the eliminating functions of the skin; that syphilitic virus has had no influence in producing the disease; that the morbid effects have in most of the cases resulted from deficiency in condition, independent of any imperfection in the vaccine virus; that the disease can only be removed by those means calculated to improve the general condition and restore the healthy play of all the functions.

Dr. James Bolton, of Richmond, Virginia, who enjoyed opportunities for the investigation of the abnormal phenomena manifested by vaccination in the Confederate Army, of the most extended and valuable character, attributed the so-called "*spurious vaccination*" to several causes. We present in this connection that portion of his reply which relates to the influence of diet, hardship, exposure and corroding upon the progress of the vaccine disease, reserving the facts which he adduces to establish the existence of syphilo-vaccination, to section 7, of this Inquiry.

RICHMOND, VA., February 25, 1867.

Joseph Jones, M. D.:

Dear Doctor—After various delays I send you my paper on Spurious Vaccination as it occurred in the Confederate Armies, only regretting that they were not forwarded at an earlier date. In addition to these, I am engaged upon some practical suggestions on vaccination, and also upon the subject of Syphilo-Vaccination; but know not when I shall be able to furnish the papers. Very truly yours, JAMES BOLTON, M. D.

During the years 1863-4, a wide-spread epidemic of small-pox broke out in the Southern States. It was impossible to supply the demand for vaccine virus. Especially was this the case in the Confederate army, which was panic-stricken by the spread of the disease. An order for virus was sent to England through the blockade. It either was never sent, or was captured. A supply was sent through the lines by the Federal authorities; but this was totally insufficient for the wants of the prisoners alone. Under orders from the Surgeon-General in Richmond, the writer was engaged in propagating virus among healthy children, and vaccinating the employes of the various departments of the Government. The reports of these vaccinations* showed that more than thirteen hundred persons, chiefly adults, had availed themselves of the powerful influence of the prophylactic agent, and that of these, only one failed to obtain perfect protection. In that single instance, the varioloid eruption appearing two or three hours after the insertion of the vaccine virus, proved that the system had already become infected and that it was too late for the vaccine virus to have exercised the least protective or modifying influence. Nearly all of these persons had been previously vaccinated. It was observed that the susceptibility of the system to the virus was remarkably great. The presence of the variolous poison in the atmosphere seemed to increase the susceptibility of the system to the influence of its antitode.† By a rough estimate, the writer thinks that two-thirds of the persons operated on exhibited phenomena of vaccinia, or of some grade of vaccination.‡ The same samples of virus were used upon nearly the whole of these without an unfavorable result in a single instance. Some of this virus, thus tested, was given to a Senator from Tennessee, whose physician reported, that having used the virus upon five members of the Senator's family, it produced no result in four cases, and those of a spurious character in the fifth. The youth's arm was almost covered with scabs of different thickness at different points, healing here and there, and breaking out again, and this succession presenting for many weeks subsequent to the vaccination. How can this be explained? This same sample of virus had been cultivated and extensively propagated by the writer for more than seven years, with none but normal results in any case. The fault was, therefore, clearly not the virus as originally furnished. But how had this virus been preserved? It may have been kept for some time about the person, exposed to heat and moist exhalations from the surface. These circumstances, most favorable to decomposition, may have caused a putrescent state in the vaccine crust.‖ This crust would of course produce a putrescent zymosis in the patient, or an eliminative action, or it would be successfully resisted, and then its effects would be *nil*.§ Or it may be explained in another way. There may have been some occult influence, atmospheric or some other, so affecting the constitution of these persons at the time that true vaccine zymosis was prevented or perverted. At this exigency the writer offered to supply the Medical Department with an abundance of pure vaccine virus. Having received instructions from Surgeon-General S. P. Moore,¶ he traveled for four weeks among the plantations in the interior of Virginia, vaccinating whites and negroes, and retracing his steps for the purpose of gathering the crusts. The result of this expedition was about eight hundred crusts, mostly from healthy negro children. This was distributed extensively through the army, and no further reports reached the writer of abnormal results. Among all the children vaccinated during this tour, one only presented abnormal phenomena, viz: its face and the vaccinated arm were covered with impetigo. This child was a mulatto, of a strumous appearance.

Dr. Ramsey, Medical Director at Knoxvillle, Tenn., reported that many cases of spurious vaccination having occurred at that post, a civil physician, of high repute, was employed to obtain a supply of reliable vaccine virus from healthy infants in that city and its environs. Notwithstanding the greatest care was taken, the virus thus obtained produced no effect in some instances, and in others it was followed by erysipelas and other cutaneous eruptions. Dr. Ramsey reports unpleasant abnormal exhibits recently observed to succeed the insertion of real or presumed vaccine virus. "These exhibits are not alone erysipelatous, but are in many instances a nondescript furfurraceous condition of the skin, presenting in flakes from the size of meal particles to that of a fish scale, and a much larger number of instances of rupia—sores of irregular shape and size, penetrating deep in the tissues, and thickening black scales occurring at points remote from, as well as at

* It is much to be regretted that the reports of Vaccinations in the Confederate Army, including those of Spurious Vaccination, were destroyed by the fire which occurred in Richmond, Va., on the night of its evacuation by the Confederate troops, and that an elaborate paper on Spurious Vaccination, by the writer, was wantonly destroyed by Federal soldiers.

† I have observed this on other occasions.

‡ Of these, two persons had been inoculated with genuine variolous matter in childhood.

‖ The vaccine crust being used almost exclusively at the South, in consequence of its retaining its properties for a longer period than the died lymph, and furnishing a more abundant supply of virus, will be always understood as the only form of virus alluded to, unless otherwise stated.

§ This I acknowledged to be entirely theoretical, as I have no facts to prove such a deterioration, and consequent zymosis ever to have taken place.

¶ The labors of this gentleman in the cause of suffering humanity, whether in the form of friend or foe, entitle him to high rank in the roll of philanthropists.

the point of which the real or presumed vaccine virus had been inserted. In many cases of the erysipelatous exhibits sloughing of the tissues occurred to an enormous extent, even to the destruction of the part for use. * * * These exhibits have been observed in every State of the Confederacy, in every Department from the Potomac to the Mississippi. They have been observed to follow the insertion of virus, which when inserted into other persons was followed progressively by pimple, vesicle, cellular pustule, drying, small in diameter with dark-brown or deep mahogany, but semi-opaque, color; the whole complete in from sixteen to twenty-one days, and regarded by me as regular vaccine disease." * * * * These abnormal exhibits "do not depend on, or proceed from, any quality essentially pertaining to the virus which was used, but result from an epidemical cause, the impress of which is made efficient or active by the co-operation with a virus. The old doctrine of predisposing and exciting causes."

When the Army of Northern Virginia lay around Fredericksburg, after the first battle at that place, a large number of spurious vaccinations occurred among the soldiers. These appeared to be abnormal results of true vaccinations. Large numbers were sent to the hospital, and many remained in a disabled condition for several weeks, the ulcers showing no disposition to heal. The army was ordered to move northward, and most of the men quitted their beds and joined the ranks. *All these cases got well on the march.* In this instance it was evident that the abnormal results were due to the condition of the systems of the men.

S. E. Habersham, Surgeon in charge of the Second Division of Chimborazo Hospital, reported that many cases of spurious vaccination occurred at that institution. In consequence of the prevalence of small-pox, orders were given by Surgeon-General Moore, to vaccinate the patients whenever the condition of their systems, impaired by disease or wounds, would admit of it. Observing that the virus, with which the hospital was supplied, produced abnormal results, a physician of high respectebility residing in the neighborhood, was employed to procure genuine virus from the arms of healthy infants, for the use of the hospital. The virus thus procurred perfectly normal results in some instances, and abnormal results in others Surgeon Habersham remarks:

"The character of all the cases which have come under my observation approximate more impetigo sparsa of an aggravated character than any other disease. The disease is evidently constitutional, as a pustule may be produced in many cases simply by the scratch of a pin in other parts of the person. I am by no means satisfied that the disease has originated by the use of *impure virus*, inasmuch as three cases were developed in this hospital as early as December, 1862, in patients who had been vaccinated with virus which in other subjects produced a perfect vaccination with no ulterior evil consequences. It will be seen that many of the foregoing cases were developed in men who stated that they were perfectly healthy up to the time of their vaccination. My experience, however, is that in the cases developed in the hospital the patients were in bad health, and of broken-down constitutions, with a very impoverished condition of blood. Under this impression, vaccination was withheld from such patients until their general health had been restored, when vaccination was practiced without any evil results.

"A close inquiry into the cause and origin of the disease will reveal facts, I am inclined to believe, which will show that the predisposing cause exists in some peculiarly vitiated condition of the vital fluid, and that the exciting cause is the insertion of vaccine virus."

As a strong corroborative evidence of the truth of these opinions, Dr. Habersham states that about this time a considerable supply of cod liver oil was brought in through the blockade, that a liberal supply was sent to Chimborazo Hospital, that he placed the patients suffering from spurious vaccinia upon the use of this valuable assimilative material, and that they all rapidly recovered.

The following reports illustrate some forms of the disease upon which these remarks were based:

"Case X.—Private W. J. Smith, Company A, Sixtieth Georgia Infantry, aged twenty-two; by occupation a farmer; has suffered from an eruption of the skin for about two months; was never healthy, having suffered from debility for a long time; born of healthy parents; was vaccinated about the middle of January, 1863, in General Hospital, at Danville, by surgeon in charge. Vaccination performed in both arms, on the left first, and about ten days afterwards on the right. Both punctures produced pustules, which healed in about two months, leaving dark cicatrices. He was then returned to duty. About two months afterwards a pustule formed on the upper edge of the cicatrix on the left arm. Eight pustules formed successively around the first secondary pustule (which gradually coalesced into one scab), similar to the eruption of variola confluense.

"Patient admitted into hospital May 27, 1863, presenting an eruption of five pustules on the right arm, and one near the wrist, one two inches below the bend of the elbow, and three above the elbow, which were covered with thick, elevated scabs, from beneath which a saneous and ichorous pus was discharged, similar in character to impetigo sparsa. General health bad. System emaciated and anemic. Treatment—iodide of potassium internally. General health and character of pustules improving."

In other cases the eruption made its appearance on the lower extremities.

The following report illustrates a class of cases unaccompanied by eruption or evidence of zymosis extending to other parts of the system.

"Case 1.—June, 1863; Henry H. Burnett, private, Company A, Sixth Georgia Infantry, admitted May 1863, with ulcer on left arm, about two inches long by one inch wide. It was very much elevated above the general surface, and upon it there was a hard, black scab, which was loosely attached at the base, and from all points issued a thin, ichorous discharge. The patient's general health was bad, and he was very anaemic. He states that he was vaccinated in camp on the fifteenth of April, by the Assistant Surgeon (does not remember name) of the Sixth Georgia Regiment, with virus supposed to be good; that his health was bad at the time, just convalescing from an attack of dysentery; that the third day after the operation the arm became very much inflamed from the elbow to the shoulder, which lasted about a week, during

which time, or soon thereafter, the ulcer extended and assumed the size and shape that it presented when admitted to hospital. The patient was put upon the iodide of potassum, gr, x, three times per day, with the syrup of sarsaparilla and generous diet. The arm was poulticed until the scab came away. It presented a cupped appearance, corresponding to the elevated and fungoid base, and has all the characteristics of an indolent and chronic ulcer, which being freely cauterized, improved, and the patient is now convalescent.

"The patient states that he was born of healthy parents, but lost a brother with consumption; that he entered the service on the eighteenth of February, 1862; did not enter the service at the commencement of hostilities because of bad health, which has improved since."

During the latter part of the year 1862, and the early part of 1864, up to the fall of Richmond, the citizens suffered for the want of provisions, from the destruction of supplies by raiding parties, difficulty of transportation, and depreciation of currency. Instances of scurvy occurred among the citizens. At this time cases of spurious vaccinia occurred, of which the following is an illustration:

"CASE 1*.—January, 1863; vaccinated a white woman, who resided on Third street, near the cemetery, and on the same day her adopted child, a girl about six years old. Both were primary vaccinations and from the same virus. The vaccine disease, which appeared on the child about the fifth day, went regularly through its stages. It was, in fact, a perfect vaccination, but in the woman it was quite different. When I examined her arm four days after the operation there was an excrescence, a spongy sore. I told her as it had failed to take, I would vaccinate her from the child at the proper time. About ten days after this I was sent for to treat her arm, which presented an ulcer of an inch in diameter, with incrustations, from which was discharged some healthy pus. She accused me at once of having used impure virus, but the case of the child protected me. Considering the ulcer the result of some vice of system (though I could obtain no evidence from her of this), I treated the case with five-grain doses of iodide of potassium and stimulants, and applied the ointment of the nitrate of mercury dilute to the part, after it had been cleansed by a flaxseed poultice. The sore proved of a very indolent character until the treatment had been used for two weeks, when it began to improve, and finally healed. From her character I inferred she had had syphilis. I vaccinated from the scab of the child without success."

It appears from the foregoing reports that in some cases the pure vaccine virus was absorbed by a system in an unhealthy condition, and produced the normal phenomena of vaccinia; but the sequelæ were abnormal. In some instances latent disease appears to have been developed, in others the system had not sufficient recuperative power to restore the injured part to its former condition, and hence ill-conditioned ulcers showing no disposition to heal were left by the falling scab. In all these cases there was no abnormal *contagious* disease propagated by or originating in vaccine virus.

The resulting vaccinia was perfectly protective; only the sequelæ were abnormal. When the virus was used from these cases, of which the records are not numerous or clear, it produced spurious results. These phenomena appeared to be only the consequence of the resisting or eliminating efforts of the part, in order to guard the system against the introduction of an animal poison. In one instance there may have been an evanescent inflammation, and in another a true zymotic action not producing vaccinia, but an ulcer difficult to heal. In the former case the vital powers were more energetic, or the blood was in a more healthy condition; in the latter these powers were more feeble and the blood was less healthy. Both of these states were due to circumstances of nutrition, exposure, fatigue, moral condition, etc.

Beside these cases others occurred of a far more formidable character.

After the trial of Wirz I published a small volume, entitled: "Researches upon Spurious Vaccination, or the Abnormal Phenomena, accompanying and following Vaccination in the Confederate Army, during the recent Civil War, 1861-1865," in which I examined the charge that the medical officers of the Confederate Army had deliberately poisoned the Federal prisoners with poisonous vaccine matter.

Copies of this work were sent to several of the most prominent Generals and medical officers of the Confederate Army, with the request that they would communicate such facts as were in their possession with reference to the sufferings of the Federal and Confederate prisoners.

The universal testimony was to the effect that the sufferings of the Federal prisoners were due to causes over which the Confederate Government had little or no control, and that the sufferings and mortality amongst the Confederate prisoners confined in Northern prisons were equally great and deplorable.

From this correspondence I select the following letters from Gen. Robert E. Lee and other eminent citizens of the Southern States:

LEXINGTON, Virginia, April 15, 1867.

Dr. Joseph Jones:

Dear Sir—I am much obliged to you for the copy of your "Researches on Spurious Vaccination," which I will place in the library of the Lexington College.

*Reported by Dr. W. H. Davis, of Richmond, Virginia.

I have read with attention your examination of the charge made by the United States Military Commission, that the Confederate surgeons poisoned the Federal prisoners at Andersonville with vaccine matter.

I believe every one who has investigated the afflictions of the Federal prisoners is of the opinion that they were incident to their condition as prisoners of war, and to the distressed state of the whole Southern country; and I fear they were fully shared by the Confederate prisoners in Federal prisons.

Very respectfully, your obedient servant,

R. E. LEE.

* * * * * * *

CRAWFORDSVILLE, Georgia, April 9, 1867.

Professor Joseph Jones, M. D.:

My Dear Sir—Your esteemed favor of the third instant was received to-day. The pamphlet came to hand two or three days ago. I am truly obliged to you for both. I have been very much interested indeed with the pamphlet, especially with the matter on pages 13 and 27, inclusive.

With renewed thanks and kindest regards, I remain yours truly,

ALEXANDER H. STEPHENS.

Mr. Alexander H. Stephens, formerly Vice President of the Southern Confederacy, thus alludes to this subject in his great work, "*A Constitutional View of the Late War Between the States*,"

"The condition of those at Andersonville at the time was, indeed, most pitiable and deplorable. A very correct idea of it is given in the report of Dr. Joseph Jones, the very learned and eminent, as well as philanthropic surgeon, who voluntarily devoted months of his time to the alleviation of their maladies and miseries. In speaking of their general condition he says:

"'Surrounded by these depressing agencies, the postponement of the general exchange of prisoners, and the constantly receding hopes of deliverance through the action of their own government, depressed the already desponding spirits, and destroyed those mental and moral energies so necessary for a successful struggle against disease and its agents. Home sickness and disappointment, mental depression and distress attending the daily longings for an apparently hopeless release, appeared to be as potent agencies in the destruction of these prisoners as the physical causes of actual disease.'"

SAVANNAH, Georgia, August 21, 1869.

Joseph Jones, M. D., Secretary Southern Historical Society:

Dear Sir—I have had the honor to receive your letter of the second instant, and thank you cordially for the compliment you pay me, by "submitting" for my criticism your valuable paper on the losses of the Confederate armies in the recent war.

Even if my means of obtaining information on the subject of that paper, so interesting to us, were equal to yours, I could not venture to criticise your work; still less, as the fact is, that I am without knowledge of the subject, or have so little as to justify the above expression—too little to make suggestions to you, or to pretend to offer you information.

Most respectfully, yours truly,

J. E. JOHNSTON.

NEW ORLEANS, Louisiana, April 11, 1867.

Dr. Joseph Jones:

Dear Sir—Your letter of the third instant has been received—also the accompanying pamphlet, "On Spurious Vaccination in the Confederate Army," which I will read with pleasure, and for which please receive my thanks.

The charge relative to poisoning Federal prisoners by our surgeons, at Andersonville, never gave a second thought to, as I believed it to be too absurd and ridiculous; but it is well to have refuted it.

I remain yours, very truly,

G. T. BEAUREGARD.

CHARLESTON, April 12.

Joseph Jones, M. D.:

My Dear Sir—Your letter, incorrectly addressed to me at Columbia, reached me only yesterday in Charleston. Your pamphlet came several days ago, and I am very grateful for it, but as I gave my copy to a professional medico, I will thank you for another. I retained the first copy long enough, however, to peruse it, and you will find from the enclosed printed notice, which I prepared editorially for the Charleston Courier, that I did, in some degree, recognized your object in one very important portion of the work. Let us hope that the notice, however inadequate to the merits of your essay, will not be altogether ungenial. Yours, truly,

W. GILMORE SIMMS.

SPURIOUS VACCINATION.

We are indebted to the author, Dr. Joseph Jones, M. D., Professor of Physiology and Pathology in the Medical Department of the University of Nashville, Tennessee, for a copy of an elaborate pamphlet, devoted to this most interesting subject of "Spurious Vaccination," a subject which, during the late war in

this country, grew to be one of enormous proportions, as being one of vital interest to the statistics of humanity and mortality in every section. The curious and complicated history of the abnormal phenomena accompanying and following vaccination in the Confederate Army, during the war, and governed—as doubtless it was—by the melancholy condition of the army, under exposure, privation, cold or heat, bad food, crowded hospitals, and the use of salt meat without vegetables; this is the general topic of this valuable pamphlet, which displays a great deal of earnest inquiry, scrupulous thought, and a speculation which seems to be built upon just and plausible premises, and which is enforced by a great body and variety of testimony from eminent medical men of equal reading and experience. But in regard to the medical and surgical value of this work we prefer to have the opinion of medical men, and we have accordingly confided the publication—which covers 136 pages of closely printed octavo—to the hands of an able friend and correspondent, who will probably afford us a just and complete opinion of its facts and theories at a future day.

But there is another point of view in which this pamphlet is to be regarded, and for which we gladly welcome its publication, viz: The Historical. It will be found, in its uniform statement of facts, in its statistics of mortality, relatively among the Federal soldiers and our own, in its very full report of the conditions under which our soldiers were treated—in their sufferings from want, equally of food and medicine—a sufficient answer to those atrocious slanders, by which it was sought to make the Confederate Government and people odious for their misfortunes, as if for crimes, and to place to their account those evils which accrued wholly from the cruel and brutal policy of the Federal Government itself, throughout the progress of the war. In this point of view, as a contribution to the history of the country, this pamphlet merits to be read by every citizen, and to find circulation in every region where it is thought necessary, or proper, that a lie should be knocked on the head as soon as possible. We thank Dr. Jones for our copy of this valuable pamphlet, and counsel its general circulation.

CHARLESTON, South Carolina, 37 Tradd Street, April, 1867.

Professor Joseph Jones, M. D.:

My Dear Doctor—Thanks for the copy of your "Researches upon Spurious Vaccination." Your labors in the department of pathology and hygiene during the war were familiar to us all in Richmond, and the profession at large must be glad to find them in print. I trust your entire labors were not lost among the Surgeon-Generals' documents? Mine were lost, but I still have notes and material which I may make public. * *

Hoping to hear from you shortly, I am, with brotherly and friendly feelings,

Your obedient servant, MIDDLETON MICHEL.

RICHMOND, Virginia, April 5, 1867.

Professor Joseph Jones:

Dear Sir—I beg to acknowledge, with many thanks, the receipt of two numbers of the "Nashville Journal of Medicine and Surgery" and your pamphlet upon "Spurious Vaccination." The last especially was read with great interest, and the profession owes you a debt of gratitude for the careful and masterly investigation you have given the subject.

I received your letter in regard to spurious vaccination, last November, and was anxious to answer it, because I had seen in the army a great many cases, and was one of a committee of investigation ordered by Dr. Guild, and referred to by Dr. ——— in the letter you publish from him; but soon after your letter came, I left the city to be married, and did not get back until it was too late, I supposed, for an answer to reach you in time for your article. My letter, however, would have served only to corroborate what you received from Dr. B. Yours, very respectfully, HUNTER McGUIRE.

FIRST MILITARY DISTRICT, RICHMOND, Virginia, April 3, 1867.

Dear Doctor—Your monograph on spurious vaccination is just received. I have looked over the articles seriatim as they appeared in your journal, with very great interest. At the same time, I am compelled to say, that you have failed to convince me of the correctness of your conclusions. I am prepared to show, and, I think, by clear, convincing evidence, that vaccine virus never conveys any other disease or morbific virus, that it refuses to associate with any other. I am very anxious to complete my paper on this subject, but have been so constantly interrupted that I can only look occasionally, and wistfully, at my unfinished manuscript.

If you had done nothing more than to have written the second section of your monograph, you would be entitled to the everlasting gratitude of every Southerner. There is no vile slander so extensively circulated, and pertinaciously insisted upon by our enemies as that which declares that we starved or otherwise maltreated the prisoners in our hands. This you have ably refuted in the second section. I will feel greatly indebted to you if you will send copies of your monograph to the following gentlemen: Dr. Edward C. Bolton, Poughkeepsie, New York; Dr. Abram Dubois, No. 13 West Eleventh Street, New York; Dr. Elisha Harris, No. 21 West Twelfth Street, New York; Dr. I. M. Minor, No. 7 Upper Gloucester Street, Dorset Square, London.

The last is a native Virginian, and true as steel. I am sure he will be glad to be furnished with the means of refuting the foul slanders where there will be a chance of having an impartial hearing.

Some time since I forwarded to you my paper on spurious vaccination as it occurred in the Confederate Armies, and also abstracts from reports of Confederate surgeons upon the same subject, but have received no acknowledgment from you, and fear my letter may have miscarried. I would regret this very deeply, as I have kept no copy.

You will, therefore, oblige me greatly by replying at your earliest convenience and relieving my anxieties. If the letter has not come to hand, you will please use all endeavors to recover it. Very truly, yours, JAMES BOLTON, M. D.

Dr. Joseph Jones, University of Nashville.

P. S. You need not trouble yourself to send a copy of your paper to Dr. Minor, of London. If you will send me a copy, I will forward it.

WILMINGTON, N. C., July 21, 1867.

Joseph Jones, M. D.:

My Dear Sir—I am under obligations to you for your "Researches upon Spurious Vaccination," which I will make a subject of report with other committee matter at the next annual meeting of our State Society in April.

I am very much pleased with the extensive research which your work exhibits, and think I can see that many spurious vaccinations observed by me, are referable to rational causes, and not much to the method of vaccination.

Spontaneous vaccinia, I am inclined to believe, occurs in this section of North Carolina and we are making every endeavor to collect everything for a complete report. I am now testing some vaccine sent by Dr. Wilson, from a spontaneous vaccine pustule from one of his cattle; Dr. Bolton is engaged in a similar investigation.

If I am not trespassing on your valuable time, I would like to learn your process of producing spontaneous vaccinia.

Allow me again to express my obligations to you, and believe me,

Very truly, yours, THOMAS F. WOOD.

Our transactions will be completed by the first of August.

THE TENNESSEE MEDICAL SOCIETY—THIRTY-FOURTH ANNUAL MEETING.

IN THE BOARD OF HEALTH ROOMS,
NASHVILLE, APRIL 10, 1867.

The Society met pursuant to adjournment. Dr. Robert Martin, President, in the chair.

AFTERNOON SESSION.

The Society was called to order by the presiding officer, and the various standing and special committees appointed as follows:

On Publication—Drs. J. H. Callendar, Joseph Jones, of Davidson, and D. F. Wright, of Montgomery.

On History of the Society—Drs. J. E. Manlove, W. K. Bowling, of Davidson, and J. W. Richardson, of Rutherford.

On Registration of Births, Deaths, etc., etc.—Drs. J. R. Buist, of Davidson; E. B. Hasbrouck, of Montgomery; Daniel German, of Williamson; B. W. Avent, of Shelby; A. Jackson, of Madison; B. Frazier, of Knox, and S. P. Crawford, of Greene.

On Amendment to Charter—Drs. R. Martin, C. K. Winston and W. A. Cheatham, of Davidson.

Dr. Buist moved that a committee of three be appointed by the Chair to select and recommend as many as eight subjects, assigned to as many suitable writers, who will be requested to prepare a paper on each, to be presented at the next regular meeting; that said committee report at an early day, to the President of the Society, the results of their labors, so that he may be able to notify each appointee. Adopted, and Drs. Buist, Eve and Du Pré appointed as such committee.

The Secretary read a letter from Dr. Lipscomb, of Shelbyville, the President elect, regretting his inability to attend the meeting of the Society, and submitting the following resolutions for its consideration:

Resolved, That although the elaborate researches of Prof. Joseph Jones may have failed to define conclusively the origin of spurious vaccination, they have not failed to elucidate the points of vital importance intimately connected with vaccination.

Resolved, That Prof. Jones has succeeded in collecting a sufficient number of facts to overthrow the long-accredited dogma, that secondary syphilis is incommunicable by inoculation.

Resolved, That the facts collected forcibly illustrate the importance of using no vaccine virus, except that obtained from perfectly healthy subjects, as well as manifest the propriety of omitting the vaccination of the unhealthy.

Resolved, That for the zeal, industry and learning devoted to this subject, by which so many important facts have been presented, and various points elucidated, the author is entitled to the thanks of the profession.

The resolutions were unanimously adopted.

SECTION III—THE EMPLOYMENT OF MATTER FROM PUSTULES OR ULCERS WHICH HAD DEVIATED FROM THE REGULAR AND NORMAL COURSE OF DEVELOPMENT IN THE VACCINE VESICLE;

SUCH DEVIATION OR IMPERFECTION IN THE VACCINE DISEASE AND PUSTULE BEING DUE MAINLY TO PREVIOUS VACCINATION, AND THE EXISTENCE OF SOME ERUPTIVE DISEASE AT THE TIME OF VACCINATION. OR, IN OTHER WORDS, THE EMPLOYMENT OF MATTER FROM PATIENTS WHO HAD BEEN PREVIOUSLY VACCINATED, AND WHO WERE PARTIALLY PROTECTED, OR WHO WERE AFFECTED WITH SOME SKIN DISEASE AT THE TIME OF THE INSERTION OF THE VACCINE VIRUS.

PROF. PAUL F. EVE, M. D., ON SPURIOUS VACCINATION—DR. R. D. HAMILTON, OF CHATTANOOGA, ON SPURIOUS VACCINATION AMONGST THE CONFEDERATE FORCES SERVING IN EAST TENNESSEE—INVESTIGATIONS OF DR. EDWARD JENNER, ON THE VARIETIES AND MODIFICATIONS OF THE VACCINE DISEASE—ANSWER TO DR. JENNER'S INQUIRIES, BY THE RECTOR OF LACKHAMSTEAD—OBSERVATIONS OF DR. JAMES DAVIS, OF COLUMBIA, SOUTH CAROLINA, ON THE VACCINE AND VARIOLOID DISEASE—EXAMINATION OF THE DOCTRINE OF JOHN HUNTER, ON DISEASED ACTIONS AS BEING INCOMPATIBLE WITH EACH OTHER—RELATIONS OF THE VACCINE DISEASE TO MEASLES AND OTHER DISEASES, WITH THE OBSERVATIONS OF NUMEROUS AUTHORS—RELATIONS OF CHICKEN-POX TO SMALL-POX—HISTORY AND PHENOMENA OF CHICKEN-POX (VARICELLA)—DIFFERENTIAL DIAGNOSIS BETWEEN VARIOLOID AND VARICELLA.

Whilst it might admit of debate, whether pure vaccine virus, obtained from persons never before vaccinated, and who manifested all the phenomena of the disease, and especially the characteristic febrile phenomena ever becomes deteriorated or possessed of deleterious properties in its passage through numerous human bodies, not suffering with such a contagious disease as syphilis; on the other hand, it cannot be denied that the power of vaccination has been impaired to a lamentable and almost incalculable extent by a succession of imperfect vaccinations; and especially by the employment of matter from those who have been previously vaccinated, or who have suffered from small-pox previous to vaccination.

Vaccination may be rendered imperfect by the development of febrile and other diseased states after the introduction of the virus into the system, arising from the action of cold, or some cause producing constitutional disturbances differing essentially from the febrile phenomena which mark the progress and perfection of the vaccine disease, as well as by its imperfect and altered course in those who are partially protected by previous vaccination.

In the isolated condition of the Southern Confederacy, cut off from the surrounding world, and denied even vaccine matter, as "*contraband of war;*" with the necessity of turning out the entire fighting population to repel invasion, and with the necessity of employing all the available med-

ical aid, good, bad and indifferent; and with the progressive increase of small-pox, it is not strange that the process of vaccination was not as carefully watched and tested as it should have been; and that consequently much imperfect material circulated as *vaccine matter*, which not only afforded little or no protection against small-pox, but also proved positively deleterious.

My friend, Professor Paul F. Eve, M. D., has recorded in his discussion of certain questions relative to the health of the late Southern Army, interesting observations upon spurious vaccination; and it will be seen, from the following extracts, that this distinguished surgeon inclines to the belief that the abnormal manifestations of the vaccine disease may be due, in a great measure, to the alteration of the matter in consequence of its passing through a long succession of human subjects, and in consequence of the co-existence of various diseases:

"The scab used in Atlanta, which did so much mischief, was soft, porous and spongy, of a yellowish-brown color, resembling concrete, impissated pus. It was not a small, hard, compact, translucent substance, like dried compressed glue, of dark-mahogany color, requiring, as the genuine scab does, considerable effort to break it; neither did it present the clear, even, vitreous aspect when fractured, but was bulky, irregular and crumbling. In every instance, wherein vaccination was attempted with it, premature effects were developed. No proper period of incubation, nor papular or vesicular eruption was observed, but in a few days, even as early as the second, inflammation had set up, and by the fourth or fifth day, sores were produced, covered by a thick, dirty crust, with an ichorous discharge. Soon an ill-constituted ulcer, with perpendicular edges, ensued, extending through the dermoid to the cellular and muscular tissues, and involving the neighboring lymphatics. The cutaneous surface suffered chiefly, presenting large, irritable, very dark-colored and scabby ulcers. Sometimes there was one, in other cases several, not on the extremity only into which the matter had been inserted, but on the others, and sometimes on the body. These cases were greatly aggravated by complications with erysipelas, scorbutis, syphilis, itch, etc. I believe we had no death from uncomplicated case of spurious vaccination, though forty to fifty patients were treated in this hospital. * * While every deviation from the regular development of the vaccine disease may be considered spurious, we yet understand now by that term, a pretty well defined, certainly a peculiar, if not a specific affection, which we have already attempted to describe. * *

Intimately connected with the nature of spurious vaccination, is involved the question of its being simply a local affection, or constitutional disease. To what are its symptoms due; to a virus, or do they arise from cachexia? I am free to confess that the investigation of this subject has caused me to reverse the opinion that the effects of impure vaccination are alone to be attributed to the bad condition of the patient's system, and did not depend upon anything special or specific. From repeated experiments, it is well ascertained that laudable pus when inserted into a healthy person is inocuous, and should it be used in even a decomposing or concrete state, will not excite certain uniform and peculiar results. Impure blood, peculiarity of constitution, indulgencies, epidemic influence, etc., etc., will account, I know, for many local disturbances, but not for the origin of spurious vaccination. In every case it is the result of vaccination with impure virus, by careless or inexperienced persons. In reference to the nature of this impurity, there is good reason to believe that it results from a perversion or modification of the vaccine vesicle. We know heat destroys vaccine, as well as variolous virus, and it may be that excessive inflammatory action changes the genuine vaccine matter into the spurious. Or it may be this virus affected by another disease, or the bad state of the system, or becoming nearly effete itself, by passing through numerous systems produces a disease only resembling the true vaccine. The difficulty of developing genuine vaccination in one once impressed by the spurious, shows plainly the connection between the two."—*The Nashville Journal of Medicine and Surgery*, New Series; vol. 1, 1866, pp. 21-28

It will be seen from the following interesting communication that Dr. Hamilton, of Chattanooga, who enjoyed ample opportunities for the investigation of the accidents following vaccination in the Confederate Army, attributes much of the spurious vaccination to the careless use of matter from imperfect vesicles or sores.

CHATTANOOGA, January 15, 1866.

Prof. Joseph Jones :

Dear Sir—Your note of the fifth was received some time since. Sickness, absence from home, and professional duties have prevented an earlier reply, which I much regret, but cannot remedy.

In regard to the subjects named, I fear I can afford but little information worthy of your consideration.

Of what is termed as "spurious vaccination," I saw many instances during my services as Surgeon in the army ; and while in charge of the General Hospital at Strawberry Plains, East Tennessee, I was directed from the Surgeon General's Office, to make a statistical report of all cases which had come to my knowledge. In obedience to this order, I had collected notes of many cases, but shortly after came the evacuation of East Tennessee, and my engagement in a different field of labor, so that the report was not made, and most of the notes which I had accumulated were "lost or destroyed by unavoidable accident."

From the few notes I have on hand, and from such facts as I can recall to memory, I give you herewith the general results.

All the cases, with a few exceptions, of "spurious vaccination," which came under my observation during the war, were reducible to one of the three following named classes:

1. A single suppurating ulcer at the point of vaccination,
2. General eruptions, sometimes single, sometimes in patches involving a considerable extent of surface, appearing during the existence of the original ulcer, or after it had healed.
3. General eruptions attended by suppuration of the lymphatic glands.

To what extent these different forms may be regarded as separate stages of the same development, I am not prepared to say, and I believe that no connection exists between them in such a sense. There certainly was no discoverable progression through the different conditions, such as is seen in some diseases.

It is evident that the result of any vaccination or inoculation must depend upon one or both of the following causes :

1. Upon the kind of virus used.
2. Upon the condition of the patient.

If vaccine virus is not used in any particular instance the result will be useless and perhaps hurtful to the patient. I am forced to the conclusion that a large majority of the cases of "spurious vaccination," which came under my observation during the war, were such because of the spuriousness of the virus used. If, by supposed vaccination, a "sore" was produced on the arm, the virus was supposed to be "taking," and straightway the matter was put into other arms, and other "sores" produced, when, on examination it would be found not one of the arms gave evidence of vaccination. The pustules did not possess the characteristics of true vaccine, either in their progress or in their results. The proper scar was not left by them, nor the usual protection from variola afforred. A portion of liquid or encrusted pus, or of epithelium, was inserted in the arm, and the patient was presumed to be vaccinated. In some instances true vaccine virus was used on persons whose systems were protected by previous vaccination, and the matter from the resulting pustules when used by others, became a source of evil. Soldiers practiced upon themselves from the arm of one of their number, whence came a long train of evil results.

But there were instances where portions of the same scab produced in some persons the true vaccine pustule, and in others only the spurious eruption, and the explanation must be found in the condition of the patient. Just what this peculiar condition is, or what its causes are, we know not. The questions concerning the influence of army life on the physical, mental and moral condition of men recently taken from the walks of civil life, are many and various, and as yet, I believe most of us are only "guessing" at answers. Every medical officer remembers how fatal among soldiers, at times, were complaints which are ordinarily remediable, and that, too, when, at the time of the appearance of the disease, the soldiers were apparently in robust health. It will also be remembered how very few instances occurred of what would be regarded as types of any one disease, while at the same time a large number of cases would be found. Nearly all were more or less modified, and some so completely as almost to lose their identity. But this subject is too extensive for discussion at this time.

In regard to the transmission of syphilitic poison through the process of vaccination, I can recall to mind a few instances, where I feel positively certain that secondary syphilitic, eruptions existed, and the patients were equally in their expressed belief that the symptoms came from vaccination. Such cases were always diagnosticated as syphilitic, and treated and relieved as such. My experience leads me to put so little faith in the assertions of persons affected with any venereal disease, on this subject, that I have arrived at no rersonable conclusion, and I can only say with the poet—begging pardon for so unpoetic a connection—"Though I canna see, I guess and fear."

To sum up then, in a few words. First—It is my belief that most of the cases of so-called spurious vaccinacion resulted from the fact that vaccine virus was not used, and therefore no vaccination, in the proper sense of the term took, place. Secondly—The condition of the system, affected by atmospheric influence, or the kind of life led by soldiers, or by what you will, so modified the action of the virus as to produce morbid results.

I regret that circumstances prevent a more extended consideration of the subject touched on in this letter, such as their importance demands, and I rejoice to learn that you are preparing a Monograph on the same, and I shall look forward with much interest for its appearance in print. Very truly, yours, R. D. HAMILTON.

Dr Jenner, in the beginning of his inquiries, felt the propriety of watchfulness; and at an early day he distinctly announced that it was possible to propagate an affection by vaccination conveying different degrees of security, according as that affection approached to, or receded from, the full and perfect standard; he also clearly stated that the course of the vaccine pustule might be so modified as to deprive it of its efficacy, and that inoculation from such a source might communicate an inefficient protection, and that all who were thus vaccinated were more or less liable to subsequent small-pox. He still further maintained that fluid taken from a genuine pustule in its far advanced stages, is capable of producing varieties which will be permanent if we continue to employ it. Dr. Jenner attached great importance to the condition of the skin at the time of the insertion of the virus.

In his tract "On the Varieties and Modifications, of the Vaccine Pustule occasioned by an herpetic state of the skin," he says, "I shall here just observe that the most careful testimonies now lie before me supporting my opinion that the herpetic, and some other irritative eruptions, are capable of rendering variolous inoculation imperfect, as well as the vaccine."

One of the entries in his Journal is to the following effect: "Inoculated Lady C. F. a second time. It is evident that *that* affection of the skin called red-gum, deadens the effects of the vaccine virus. This infant was covered with it when inoculated four days ago. The same thing happened to Mrs. D's. infant."

In a letter to Mr. Dunning, dated Berkely, December 23, 1804, Dr. Jenner says:

"There may be peculiarities of constitution favorable to this phenomenon. My opinion still is, that the grand interference is from the agency of the herpes, in some form or another; for I have discovered that it is very Proteus, assuming, as it thinks fit, the character of the greater part of the irritative eruptions that assail us. I shall have much to say on this disease one of these days."

The reported failures of vaccination, and the occurrence of several violent variolous epidemics in different parts of the country, induced him to endeavor to rouse the attention of professional men to those points, in the practice of vaccination, which he deemed essential to its success. With such intentions he printed a circular letter early in 1821, which was sent to most of the respectable medical men in England; in it he directed their observation to the three following questions:

"First. Whether the vaccine vesicle goes through its course with the same regularity when the skin is under the influence of any herpetic or eruptive disease, as when it is free from such affections; secondly, whether the existence of such eruptive diseases causes any resistance to the due action of vaccine lymph, when inserted into the arms; thirdly, whether cases of small-pox, after vaccination had occurred to the observer, and if so, whether such occurrences could be ascribed to any deviation in the progress of the vaccine pustule, in consequence of the existence of herpetic or other eruptions at the time of vaccination."—*The Life of Edward Jenner, M. D., L.L. D., F. R. S., etc., by John Baron, M. D., vol. 2, p. 272.*

The answer to these inquiries, by the rector of Leckhamstead, contains facts of such value in their bearing upon this portion of the subject, that we are induced to reproduce it entire:

LECKHAMSTEAD, Near Buckingham, June 29, 1820.

Edward Jenner, M. D.:

Dear Sir—Your letter did not reach Buckingham till June 23, though dated the twelfth. The object of inquiry appears to be the extent to which cutaneous diseases reject or modify the vaccine virus, so as to render the efficacy and security doubtful. I have looked over a number of copies of communications to Dr. Harvey, and will with great pleasure send you the transcripts of the interference of variolous and vaccine affection, and the superceding power of the latter if applied in time, six of which took place at Old Stratford, in 1816, among the children of one family, being the whole time under the same roof. The distress and alarm at the time were extremely great, as the inhabitants were recovering from the measles when the

small pox broke out. The anxiety of the parents was such that I was induced, contrary to my own opinion, to vaccinate several where the fever of measles had not completely subsided; the consequence of which was nothing more than that the vaccine virus lay dormant in its cell till the field was clear, and came into action two or three days later; but afterwards proceeded in as regular and decided a manner as in constitutions which were not previously engaged.

I discovered at a very early period that the itch was not an impediment; as to the shingles, I cannot speak. The grand rejecting agent in children is the tooth-rash, or, as it is here commonly called, the red-gum, especially while it continues bright and active. Dr. William Cleaver (when Bishop of Chester) promoted an extensive variolous inoculation in his diocese. Some years after he asked me if I could account for the very frequent failure of communicating the affection to young children. I told him that it applied equally to the vaccine; though frequently, if the virus was fresh and active, it would be suspended in its career for a time only, but push forward with success at last.

I beg to assure you, sir, that nothing I have met with has, in the slightest degree, shaken my faith in the vaccine. I have several children, the eldest sixteen, all vaccinated by myself; and of 14,305, all within a few miles of this place, I have never heard of a single fatal disappointment; and of only two or three cases of modified, or what I should feel inclined to call superficial or cutaneous small-pox. As to remote or deriative diseases, I know of no such thing fairly to be ascribed to the cow-pox; I have ample means of knowing if such a thing had taken place, as the people of my two parishes, and many in the neighborhood, are, somehow or other, continually coming under my consideration for medical assistance. My communications of late years have been to Dr. Harvey, according to the directions of the National Establishment; but I have met with no demand for inoculation since February, 1820, simply from the absence of any stimulating alarm. I am, dear sir, with the highest respect, your most obedient, humble servant,

T. T. A. REED, Rector of Leckhamstead.

Mr. Reed had, in 1806, printed and distributed a tract for the encouragement of those who entertained any doubt respecting the efficacy of vaccine inoculation; and distinguished himself as an ardent and successful promoter of vaccination. His testimony, therefore, is of great value.

Dr. Jenner maintained to the last hour of his life, that any cutaneous disease, however slight in appearance, was capable of interfering with the regular course of the cow-pox, and of preventing it from exercising its full protecting influence; and his directions for obviating any deterioration of the virus, regarded first, the character of the pustule itself, the time and quality of the lymph taken for inoculation, and all other circumstances that might go to affect the complete progress of the disorder. Thus he maintained that the vaccine fluid should be taken, for the purpose of inoculation, at an early period of the formation of the vesicle, and before the appearance of the areola; and he insisted that the pustule, when excited, should be permitted to go through all its stages in an uninterrupted manner, and if any deviations appeared in its progress, he always forbade the employment of virus from such a pustule for further vaccinations.

Dr. Waterhouse, in a letter to Dr. Mitchell, dated Cambridge, September 26, 1801, says: "Yesterday I received a letter from Dr. Jenner, one paragraph of which I must transcribe, because it contains the *golden rule of vaccination*, viz: 'I don't care what British laws the Americans discard, so that they stick to this—*never to take the virus from a vaccine pustule for the purpose of inoculation, after the efflorescence is formed around it.* I wish this efflorescence to be considered as a sacred boundary, over which the lancet should never pass." *Med. Repository, N. Y.*, vol. 5, p. 236.

Every deviation, from whatever cause it may have arisen, was considered by Jenner of the greatest moment; and as has been fully shown by the learned author of his life, in all his published works, as well as in every private communication, he never failed to express his deep sense of the importance of the most scrupulous attention to that part of the subject; and to the last he felt that, had his admonitions been received as they ought, had the phenomena connected with vaccine inoculation, been studied by all who conducted the practice, a large proportion of the failures would have been avoided.

The following important and interesting communication, published about forty-five years ago, confirms, in a striking manner, the correctness and great value of the laws laid down by Jenner, with reference to the relations of the vaccine disease to cutaneous affections:

OBSERVATIONS ON THE VACCINE AND VARIOLOID DISEASES. COMMUNICATED BY JAMES DAVIS, M. D., OF SOUTH CAROLINA.

I offer you the following communication, not only because it seems to corroborate the observations of Dr. Jenner and others, that the simultaneous existence of cutaneous diseases, with the vaccine-pox, has a tendency to vitiate the virus of the latter disease, and render it unfit for communicating the true kine-pock; but, moreover, because it would appear that the vaccine matter is liable, from this circumstance, to be converted into a virus of a totally different character. * * *

I extract the following case from my note book:

On the twenty-ninth of June, 1814, I vaccinated Master James D. Montgomery, æt. eighteen months, son of Dr. B. R. Montgomery, Professor of Moral Philosophy, etc., in the South Carolina College, together with six other healthy children. I had obtained the matter that I made use of from Dr. Smith, of Baltimore. James D. Montgomery had been laboring under a cutaneous disease (the strophulus interlictus of Willan) for about three months. It had resisted every remedy which I had prescribed for it, and by this time had literally spread over the whole surface, so as to render it difficult to find a sound spot on the arm large enough for making the insertion. I should have been deterred from vaccinating in such a case, but for a remark of Dr. Jenner, viz.: "That vaccination, although not very certain to take in cases of cutaneous eruption, yet, when it did take, it was curative of the cutaneous disorder." Upon this information I recommended it to Dr. Montgomery, who readily acceded to the experiment. The vaccine failed to take effect in every one of the cases, except in that of J. D. Montgomery; and in his case it was really gratifying and delightful to observe the effect of it on the cutaneous disease. As the vaccine pock advanced, the affection of the skin disappeared, and that in a very exact proportion to each other; so that, by the time the pock was mature, the cutaneous disorder had entirely gone off. From fifteen to twenty-five days after the kine-pock had been in its full course, he was afflicted with two abscesses, one on his back and one on his breast, which discharged from half an ounce to an ounce of laudable pus; since which time he has remained in sound and perfect health.

His pock proved to be anomalous, and whether it were sufficient to protect his system against the small-pox has not since been tested. But from the constitutional symptoms which I attentively observed, I am very much inclined to believe that as to himself it was effectual.

The virus manifested no signs of having taken effect until the eighth day, when the small inflamed point at the puncture first appeared.

The areola did not progress from day to day with regularity, nor was it at any time sufficiently circumscribed, having some radii considerably longer than others. Its color was a coarse red, instead of that beautiful fine blush which the genuine vaccine generally exhibits.

The pock, although of ordinary size, and of a concave surface, was destitute of that cordon of bead-like vesicles, which form around the corona of the true kine-pock It was peculiarly dry, insomuch that it was difficult to obtain from it as much lymph as would serve for further vaccination.

Four healthy children (white and black), of the family of Dr. E. D Smith, Professor of Chemistry, etc., were vaccinated from this pustule. I had expressed an opinion, that although I believed the constitution of little Master Montgomery was secured against the small-pox, that, nevertheless, I doubted of the efficacy of the matter of his pustule to communicate the true disease. As matter, however, was hard to be obtained, and as there was conceived no danger could result from it, the doctor determined on making the trial. It failed to produce any effect whatever on all, except on one of the doctor's own children. In this case the puncture began to inflame within the first fourteen hours. The inflammation spread rapidly, accompanied with innumerable papulous eruptions over the inflamed surface, exuding a profuse quantity of gelatinous matter. It continued to spread for about thirty hours, assuming in its progress rather a formidable appearance, and exciting a good deal of alarm, until it occupied a space longer than five or six areolas of true pock; extending over the one more longitudinally than laterally. Aperients were administered, and the topical affection fomented with a decoction of chamomile flowers, and in about forty-eight hours it had totally disappeared, having exhibited no sign whatever of anything like a pock. There was no constitutional disturbance accompanying the affection. The child remained in perfect health, and has undergone the true kine-pock by a subsequent vaccination.

This case evinces two facts in a clear and decided manner, to-wit: that the vaccine disease is capable of effecting the cure of certain inveterate diseases of the skin; and that certain diseases of the skin may exert an influence over the vaccine matter, as not only to vitiate and render it unfit for communicating the true kine-pock; but also abso-

lutely to change and convert it into a poison of a new and unknown character Two facts of great practical importance, and which, perhaps, deserves more investigation and scrutiny, than they have hitherto received.

The influence of kine-pock over cutaneous disorders is an old remark; and the influence of diseases of the skin in vitiating the matter of the kine-pock, and rendering it unfit for communicating the true pock, is equally old. But its liability to be converted into a poison of a different nature, productive of singular and anomalous affections, in consequence of being blended with certain cutaneous disorders, is a subject which has not hitherto attracted as much attention as it merits. In this instance, the cutaneous disease of Master Montgomery obviously occasioned a conversion of the vaccine matter into a new kind of virus, producing a new and singular affection. It is true it proved to be a mere topical affection, and terminated without any serious consequences; but, as the vaccine matter is liable to be changed by one form of cutaneous disease, is it not reasonable to conclude that it may also be changed by others? And, although, in this particular case, it was changed into comparatively an inocuous virus, have we any evidence, that in blending with some others of the multifarious affections of the skin, incident to mankind, it may not become converted into a virus of deleterious and destructive operation?

All this, however, indicates nothing against the utility and importance of *genuine* vaccination, but only shows how important it is that it should be practiced with a care, circumspection, and skill, with which the prevailing custom of our country at present is utterly incompatible; and until there shall be a reform effected in this respect, it will be in vain to look for the full extent of those beneficial results to mankind which the kine-pock is unquestionably calculated to afford.

The attainment of these results in strict conformity with the laws of our condition in the attainment of every other great and important good, is beset with difficulties; nevertheless, we have no reason to suppose that these difficulties are insuperable. Every year brings to light some new facts, which enable us to approach nearer and nearer to the attainment of the desired object. And as one principal obstacle to the improvement of our knowledge of this subject has been the apathy, indifference, and even levity, with which it has been received by a great majority of the community; so, when, perhaps, from severe afflictions and scourges, or from any other cause, this supineness and indifference shall be removed; then the march of improvement will be rapidly accelerated, and great and permanent advantages will be the happy result.

Would it not be a wise precaution, and worthy of legislative provisions, to impose a penalty on any one who should communicate the vaccine disease from an unhealthy subject?—*The American Medical Recorder of Original Papers and Intelligence in Medicine and Surgery*, conducted by John Eberle, M. D., Philadelphia, and H. W. Ducachet, M. D., New York, vol. 5, 1822—pp. 208-272.

The power of the vaccine virus to relieve diseases of the skin, can only depend upon its absorption into the blood, and its effects upon the entire system; and facts are now wanting to show by actual manifestations of the local disease in other parts of the system not inoculated with the virus, that the entire system as well as the skin is brought under the action of this poison.

Dr. Denby reported the case of Henry Freeman, a lad of twelve years of age, who was vaccinated in the left arm by the usual mode. The vesicle was marked by the appropriate progressive character of successful inoculation. It happened that on the same day on which he was vaccinated (five hours subsequent to that process,) an incised wound was accidently inflicted on his right knee; which wound, for two or three days promised union by the first intention. On the fourth or fifth day, however, an increase of pain was felt in the knee, with throbbing and heat about the edges of the wound; and, on inspection, some slight papulae, to the number of ten or thirteen, were observed surrounding it. These appearances were yet referred to a common cause. On the eighth day, their peculiar and regular form imparted a conviction that they were true vaccine vesicles, which they proved to be by their progress and maturation.—*London Med. Press*, April, 1825.

As far as our knowledge extends, the records of Medicine, are singularly barren of critical observations upon the phenomena manifested by man, when acted upon, by two or more diseases at the same time. This imper-

ction of knowledge results not only from the complexity of the phe-
omena, and the difficulties of the investigation, but also from the com-
aratively infrequent occurrence of two or more contagious diseases, at
ne same time, in the same household, and in the same individual.

Every fact illustrating the relations of the vaccine disease, to other dis-
ases arising simultaneously in the samei ndividual, is of importance in the
ght which it throws upon the modifications of the vaccine disease, and
pon the question of *the possibility of transmitting various contagious diseases
rough the medium of vaccine virus.*

The following facts and observations by various writers, bearing upon
ese questions, which we have gathered up after some research, are pre-
nted under this division of our subject, to which they naturally belong,
ther for the purpose of exciting and aiding farther investigation, than as
ll and complete investigations upon which definite and uncontrovertible
rinciples may be founded. I have myself conducted extended investiga-
ons upon the mutual relations, of various concurrent diseases, as malarial
ver, typhoid fever, pneumonia, cerebro-spinal meningitis, hospital gan-
ene and pyæmia, the results of which it would be impossible to present
the present time, although related to the subject now under discussion;
d I shall present those facts which relate chiefly to the relations of small-
x and the vaccine disease to several of the Exanthemata.

If we accept without reserve the doctrine of John Hunter, that "No two
tions can take place in the same constitution or in the same part, at one
d the same time; no two different fevers can exist in the same constitu-
on, no two local diseases in the same part, at the same time;" (*Works of John
unter*, edited by James F. Palmer, London, 1837, vol. 2, Treatise on the
enereal Disease, p. 132); the question of the modification of the vaccine dis-
se by concurrent diseases, as well as the possibility of the transmission of
ntagious diseases through the medium of the vaccine virus is definitely set-
ed in the negetive. The unreserved assent to such a doctrine as this, is
holly incompatible with the admission of the possibility of transmitting
ch a disease as syphilis through the medium of the matter produced by
distinct disease, different in its mode of origin, constitutional action,
mptoms and progress.

Even the renowned author of this doctrin, appears to have experienced
fficulties, when he attempted to apply it universally. The engrafting of
her diseases upon the systems of those who were laboring under constitu-
onal syphilis, and scurvy, as well as the occasional occurrence of these
vo diseased states in the same individual, presented at the outstep diffi-
lties to the mind of John Hunter, which he attempted to remove by argu-
ent. The mode, as well as the facts, by which Hunter supported his doc-
ine are worthy of full consideration, in this connection, as gathered from
arious portions of his works.

"*Of diseased actions, as being incompatible with each other.*—As I reckon every opera-
on in the body an action, whether universal or partial, it appears to me beyond a doubt
at no two actions can take place in the same constitution, nor in the same part, at one
d the same time; the operations of the body are similar in this respect to actions or
otions in common matter. It naturally results from this principle that no two different
vers can exist in the same constitution, nor two local disease in the same part. There
e many local diseases which have dispositions totally different, but, having very
nilar appearances, have been supposed by some to be one sort of disease, by others to
of a different kind, and by others again a compound of two diseases. Thus the
nereal disease, when it attacks the skin, is very similar to those diseases which are
lgarly called scorbutic and *vice versa*. These, therefore, are often supposed to be mixed,
d to exist in the same part. Thus we hear of a pocky-scurvy, a pocky-itch, rheumatic-
ut, etc., which names, according to my principle, imply a union that cannot possibly
.ist.

"It has been considered as contradictory to this opinion that a patient might have scrofula, scurvy, venereal disease, small-pox, etc., at the same time. All of this is indeed possible; but then no two of them can exist in the same part of the body at the same time; but before one of them can occupy the places of another, that other must be first destroyed, or it may be superseded for a time, and may afterwards return.

"When a constitution is susceptible of any one disease, this does not hinder it from being also susceptible of others. I can conceive it possible that a man may be very susceptible of every disease incident to the human body, although it is not probable; for I should believe that one susceptibility is in some degree incompatible with another, in a manner similar to the incompatibility between different actions, though not of so strict a kind.

"A man may have the lues and the small-pox at the same time; that is, parts of his body may be contaminated by the venereal poison, the small-pox may at the same time take place, and both diseases may appear together, but still not in the same part.

"In two eruptive diseases, when both are necessarily the consequence of fevers, and where both naturally appear after the fever nearly at the same distance of time, it would be impossible for the two to have their respective eruptions, even in different parts, because it is impossible that the two preceding fevers should be coexistent.

"From this principle I think I may fairly put the following queries: Do not the failure of inoculation, and the power of resisting many infections, arise from the existence of some other disease at that time in the body, which is therefore incapable of another action?

"Does not the great difference in the time, from the application of the cause to the appearance of the disease, in many cases, depend upon the same principle? For instance, a person is inoculated, and the puncture does not inflame for fourteen days, cases of which I have seen. Is not this deviation from the natural progress of the disease to be attributed to another disease in the constitution at the time of inoculation? Does not the cure of some diseases depend upon the same principle?—as, e. g., the suspension or cure of a gonorrhœa by a fever.

"Let me illustrate this principle still further by one of many cases which have come under my own observation. On Thursday, the sixteenth of May, 1775, I inoculated a gentleman's child, and it was observed that I made pretty large punctures. On the Sunday following, viz., the nineteenth, he appeared to have received the infection, a small inflammation or redness appearing around each puncture and a small tumor. On the twentieth and twenty-first the child was feverish; but I declared it was not the variolous fever, as the inflammation had not at all advanced since the nineteenth. On the twenty-second a considerable eruption appeared, which was evidently the measles, and the sores on the arms appeared to go back, becoming less inflamed.

"On the twenty-third he was very full of the measles; but the punctures on the arms were in the same state as on the preceding day. On the twenty-fifth the measles began to disappear. On the twenty-sixth and twenty-seventh the punctures began again to look a little red. On the twenty-ninth the inflammation increased, and there was a little matter formed. On the thirtieth he was seized with fever. The small-pox appeared at the regular time, went through its usual course and terminated favorably." (Vol. 3, Treatise on the Blood, Inflammation and Gunshot Wounds—pp. 3-5.

"*All diseased actions are simple.*—A disposition of one kind may and shall exist in a part or whole, while an action of another kind is going on; and when the action ceases, the disposition, or dormant action, if we may be allowed to call it so, shall then come into action. * *

"Two children were inoculated for the small-pox. Their arms inflamed, but about the third or fourth day from the inoculation symptoms of fever arose, and the measles appeared, and went through their progress as usual. During this time the inflammation in the arm was arrested; but when the measles were completely gone, the small-pox took place, and went through its progress.

"Here a disposition for the measles had taken hold of the body, but although it had done that previously to the small-pox, yet it was not in such a way as stopped the progress of the small-pox. The small-pox matter was capable of contaminating, and produced inflammation, which went to a certain length, but the moment the measles changed their disposition into action, as the two actions could not go together, the action of the small-pox was suspended till the measles had gone through its action, and the moment the constitution got free of this, the small-pox began to act again.

"A lady of rank was inoculated by Mr. Sutton. A few days after a fever came on, of the languid or putrid kind, but without any eruption, except a few petechiæ on the breast; she went through the process of a low fever, and afterwards the small-pox commenced; yet when the pustules matured they spread and were very large; also a different set of eruptions succeeded so that thirty days passed before the skin was clear of the eruptions.

"These cases show that but one mode of action can take place at the same time; yet I could conceive that two actions might produce a third one, which might have been a new poison, as the last case in some measure seems to show." (*Vol.* 1, *Principles of Surgery*, pp. 312-313.)

Dr. Joseph Adams, in his valuable Observations on Morbid Poisons, Chronic and Acute (London, 2d Ed., 1807,), advocated the doctrine of Hunter, that "Two actions cannot be carried on at the same time, or in the same constitution. And recorded in his work the following observations to sustain this proposition:

"Though the law was entirely overlooked till Mr. Hunter's time, yet it is now as well ascertained as any other in pathology. It is worth remarking, that in all the epidemics described by Sydenham, in which small-pox and measles raged at the same season, he gives no hint of there ever appearing at the same time in the same person Dierembroek, indeed, mentions a solitary instance in which the two diseases took place at the same time. His son remarks on the passage, that he never met with a similar instance more than twice in his own practice. Dierembroek's account is somewhat confused. It should be remarked, too, that measles was at that period not so distinctly marked as in later times, and that with the small-pox and other exanthemata, an unusual efflorescence, which may be mistaken for measles is not uncommon We have, however, two cases given us by that close observer, Dr. Russell (*Medical and Chirurgical Transactions*, vol. 2, p. 90), which from the reputation of the author, deserves particular notice. The series and order of symptoms are traced with such accuracy, as not only to place the fact beyond a doubt, but to enable us to make remarks without conjectures, or with only such as every reader will see are admissible.

"We shall first observe, that when in the ill-built and crowded city of Aleppo, small-pox and measles were at the same time epidemic for three months together, only two such cases occurred. In both these cases, the measles were of a formidable kind. It is now established, that if measles do not produce their full action, they sometimes occur a second time. (*See Dr. Willan's Diseases of London*, p. 207) It would be a curious inquiry, if there were chance that it could be satisfied, to learn whether, on a future epidemic, these children took the measles again. However, those who know how few laws in pathology are without any exception, will only be surprised that this should so rarely occur.

"Dr. Settsom (Mem. of Med. Society, vol. 4, p. 288), relates the history of a family, consisting of the parents, eight children, and three servants, among whom scarlatina and measles appeared about the same time. Some had measles first, others scarlatina. All the latter, and as many as had gone through them before, had measles. In consequence of this succession, adds the Doctor, the disease continued in the family for two months, which probably might have terminated in as many weeks; but no person had the two diseases at the same time, so far, at least, as could be ascertained by the symptoms!"

The industrious De Haen, wishing to discover a common original cause for all the exanthemata remarks that small-pox and measles usually become epidemic about the same time. Referring to his notes, he observes, that in the year 1752, scarce a family but was visited by other diseases at the same time, yet each individual had the two diseases in succession—Videas successive iisdem in aedibus occupare infantes quorum alii morbillis, variolis alii laborere demum incipiant.—*Rat. Med., vol. i., page* 102.

"Dr. Winterbottom, in a general vaccination, describes the retardation of that process, by the occurrence of measles, as an event too common to excite any particular attention. (*Med. Trans., vol. xiv., p.* 25). The same retardation was remarked by Dr. King, from the same cause. (*Med. Trans., vol. xiii., p.* 167). The same occurred to Mr. Wachsell, at a general inoculation in Walthamstow.

"Dr. Willan observes, that it is generally found the small-pox, measles, scarlet fever, and whooping-cough, become epidemic about the same time, and continue their progress, though not with equal violence. (*Diseases of London p.* 105). Yet of the three former he gives no instance in which two of them appeared at the same time in the same person. It is evident that this was not from any inadvertency, because we find the same accurate writer, on another occasion, observing that whooping-cough and small-pox had occasionally occurred in the same person and at the same time. On this I would remark, that after the febrile paroxysm of whooping cough has subsided, the disease loses its specific character, and if the lungs have materially suffered, the cough may be exasperated by the variolous paroxysm. But Dr. Willan, in another place (*Diseases of London, pp.* 38–39) asserts, that in some instances whooping cough commenced during the small-pox eruption. If this fact had been furnished by a less accurate observer, I would have objected, that whenever whooping cough is epidemic, we have usually other severe coughs at the same time, which in children, are not easily distinguishable from whooping cough. But admitting the accuracy of the statement, it only proves, as Dr. Willan observes,

that the law, though very general, is not without any exception. We have also his own authority, that in some instances the whooping cough was instantly superceded by small-pox, and after the decline of the latter, returned with the same violence as before. Mr. Oakes (*Medical Journal*, vol. 8., p. 426) relates the case of a child whom he was under the necessity of inoculating with small-pox whilst under the whooping cough. The consequence was that as soon as the eruption appeared, the cough ceased and never returned. The same has frequently happened after vaccination, and I have reason to believe, permanently, as the cough has not returned at least ten days after the process of vaccination has been completed. This is now so generally understood, that many mothers have brought their children to the hospital for vaccination, under an expectation of curing them of whooping cough, and I do not recollect that any of them have been disappointed. However, I would never recommend it till the acute symptoms of the cough are passed, for, as till that time the full action of the disease is not over, it is reasonable to expect its return when the process of vaccination is completed.

"To those who are fond of tracing the operation of nature under disease, it will be curious to mark the exact regularity of the succession of these morbid poisons when they occur in the same subject. Mr. Hunter, (Introduction to Treatise on the Venereal Disease, and also to the Treatise on the Blood, etc)., found the variolous insertion in his patient interrupted on the fourth day after the puncture was made, till which time it had proceeded regularly. On the day following, the morbillous fever commenced, and on the fourth day after that, the measles appeared. Four days afterwards, the measles began to disappear. During these eight days, the variolous insertion had made no progress; but on the following day it recommenced its process, and in five days afterwards the variolous fever commenced. Here the constitutional *disposition* was interrupted on the fourth day. On its recommencement, five days more were necessary before the *action* could take place, nine days being the medium between the insertion of small-pox and the commencement of the variolous fever.

"Mr. Cruickshank's case (Treatise on the Absorbent Vessels, p. 126,) appears to have been interrupted *ab initio:* for he found his patient with all the symptoms of morbillous fever on the ninth day after inoculation. The punctures of the arms, therefore, continued invisible till the constitution began to recover from the measles, after which time the punctures inflamed and required their full period of eight days for the appearance of small pox.

"In a general vaccination at Walthamstow, two children were seized with the morbillous eruption on the eighth day after vaccination. In these the areola from that virus was suspended for four days. In a third, on the tenth day; and here the interruption to the process was only three days.

"But a most elegant experiment, in illustration of this subject, is contained in Dr. Willan's last number of Cutaneous Diseases. 'I inoculated,' says Dr. Willan, 'about the same time, three children with the fluid contained in these (lymphatic or miliary vesicles in measles), but no effect was produced by the inoculation. A similar trial, at the inoculation hospital, proved more successful. Richard Brooks, aged eighteen, was inoculated by Mr. Waschsel with fluid from the miliary vesicles in the measles, and with vaccine virus, January 6, 1800. On the tenth there was some redness and ulceration in both the inoculated places. January 15, the redness round the part where the lymph of the measles was inserted had disappeared, while the vaccine pock was vivid. January 18, the vaccine disease was over. January 22, he has a severe cough, sneezing and watery eyes, with cold shiverings and fainting. January 28, the measles appeared; his eyes were inflamed and the lids swollen. January 29, the efflorescence was diffused all over the surface of the body; frequent cough and violent fever. February 1, efflorescence disappeared; cough and fever much abated. From that time he gradually recovered, and was dismissed in health on the twelfth of February.'

"This interesting passage, besides containing an account of the successful inoculation of the measles, affords also a striking illustration of the protraction of a disease, after the disposition of it had taken place, and its regular return to complete all its periods, as soon as the cause which interrupted them ceased. This subject was, at the same time, susceptible of the two contagions; and as long as the diseased actions were local, both went on at the same time in different parts. But as soon as the constitutional disposition commenced in one (the vaccine), the local action from the other was suspended. When the vaccine disposition and action were completed, the rubeolous disposition commenced. Four days afterwards the constitutional symptoms showed themselves, with cough, sneezing and watery eyes.* In six days more the eruptive symptoms began, and were completed on the following day. On the fourth day afterwards, the efflorescence disappeared and the symptoms abated, making, in the whole, about twenty-seven days, a fair allowance for the two diseases.

*Dr. Willan considers the common period, after infection by effluvia, before these symptoms appear to be from six to ten days. The anticipation in this case, by inoculation, is nearly analogous to the mean difference between inoculated and casual small-pox.

"The following laws, then, are to be admitted with as few exceptions as any others that are received in pathology:

"1. All persons are susceptible of the impression from a morbid poison, in proportion as they are unaccustomed to it.

"2. That *susceptibility* and *disposition* are necessary in a constitution or part before the action excited by a morbid poison can take place.

"3. That after the constitutional disposition has taken place from a local diseased action, the destruction of that local action will prevent the future appearance of the constitutional disease.

"4. That no two actions from two different morbid poisons can be carried on at the same time in the same part, or in the same constitution.

"5. If a constitutional disposition to one morbid poison exists, whilst the action of another is going on in the constitution, we ought to expect the action of the first to appear after the action of the second is completed, or has ceased.

"6. Though nothing can prevent an *action* from following after a *disposition* has taken place, yet a *disposition* may be *prevented* by preventing a susceptibility in the constitution or part.

"7. The susceptibility may be prevented by rendering the constitution familiar with the morbid poison, or, as long as the constitution is exposed to it, by keeping up a constitutional action previously excited by another morbid poison, or any other cause."—*Adams on Morbid Poisons, pp.* 21-23.

Dr. Lundford, a native of Jamaica, who made *Yaws* the subject of his inaugural dissertation, states that "those who are under the *Yaws* are liable to the other exanthemata, such as measles and small-pox. The latter may be induced by exposure or inoculation, which last is better attempted when yaws is in the decline, for then the small-pox will either entirely take away yaws, or at least will check it for some time; nor will the funguses continue long, even if they should happen to appear again on the surface."

Upon this observation Mr. Adams, in his work on Morbid Poisons, remarks:

"All this is perfectly analagous to what has been traced in other morbid poisons. It is probable that the irritation from small-pox and measles, being greater than from yaws, may interrupt the latter at any time. But the laws of that poison, requiring a certain course to be pursued, if the new irritation is induced before that course is completed, the disease must return as that new irritation ceases. If, on the contrary, the irritation has not been induced till the course of yaws is completed, and nothing remains of it but an habitual ulceration, the new irritation will not only supercede the old action, but by breaking the habit very much expedite the cure."

"Dr. Dancer, in confirmation of the above, gives the following quotation from Dr. Membhard: 'During the universal prevalence of small-pox in this Island, in the year 1784, it was remarked, that several negroes afflicted with yaws, who had the yawy pustules on the surface of the body, and *had been a considerable time* under all the afflicting circumstances of the disease, were inoculated promiscuously among many other negroes. The result was that upon the decline of small-pox, and dying away of the pustules, the yaws also gradually disappeared; as if both might be considered in the light of one congenial disease. (*Adams on Morbid Poisons*, pp. 212–213.)

Dr. Delgrade relates several cases of the simultaneous occurrence of small-pox and measles, which ran their course together. A child was inoculated with the matter; on the eighth day, this infant, after a slight indisposition, took the measles.

"On the fifteenth, after having completely recovered from the measles she became very feverish. Between this and the twentieth, she had several convulsions. On that day small-pox appeared. The infant not having been near any other child with that disorder, it was thus proved not only that the eruption was variolous, but that the fever was infectious.

"Still the difficulty remained of accounting for its origin, since no small-pox was known to prevail in the neighborhood. The parents and neighbors could give no clue. Soon afterwards I heard that a child had recently died of combined small-pox and measles. Unable to trace this report, I concluded it was merely an erroneous account of the present case. Calling, however, with Mr. Daniell, on a female, one of his dispensary patients, she informed me that the child was her own. Of this case I can give no accurate narrative. The mother herself was dying, and the child had been visited by no medical attendant. Judging from the statement, I imagine the two disorders occurred

in succession, not simultaneously. The child was taken ill some days before Brookes' and certainly died of small-pox. Yet even this was unsatisfactory since the families lived at a distance from each other. No communication of the children was known, until I discovered they had attended the same school, a circumstance of which their friends were mutually unconscious." (*Medical Chirurgical Transcript, of London*, vol. 1, Part I.)

Dr. Russell, in noticing the reciprocal influence of small-pox and measles, states that he carefully watched above three hundred cases in which these diseases succeeded each other, at a time when they were both epidemic at Aleppo (1765). He noticed that the measles rarely succeeded small-pox in less than twenty days from the first appearance of the eruption. Several cases occurred where small-pox succeeded measles before the total disappearance of rubeolous rash from the extremities, that is on the eleventh or twelfth day of the eruption. He adds, "so little did the quality of the first disease influence that of the second, that a mild, distinct small-pox was often observed to follow the worst kind of measles, and vice versa." Willan relates the case of a young man, aged eighteen, inoculated for measles and cow-pox on the same day; the cow-pox took the lead, measles following at the end of sixteen days; and Dr. Gregory has described a case very analogous, but there measles had the start, and after sixteen days cow-pox had its turn. Dr. Gregory calls attention to the fact, that in each case sixteen days was the period of suspension, and expresses his belief that this was not accidental. (Lectures on the Eruptive Fevers.)

Dr. Moreland reported to the Boston Society for Medical Improvement the following interesting case:

On the thirteenth of February, 1856, he vaccinated a healthy male infant, six months old. On the seventeenth of the same month, a faint but sufficiently distinct eruption of measles was observed about the neck and shoulders. The usual symptoms of rubeola had declared themselves on the next morning after the vaccination, and the disease, consequently, must have commenced only a few hours previously to that operation, if four days be adopted as the period elapsing between the attack and the appearance of the eruption. The vaccine vesicle matured very slowly for several days, and the rubeolous eruption continued with varying distinctness, but always comparatively slight, until the nineteenth of February, when it disappeared. The vaccine vesicle then took a start, and went on rapidly to perfection. There seemed to be a retarding action reciprocally maintained for a time by the two affections, thus accidentally concurrent; vaccine finally prevailing. The circumstantial record made at the time reads thus:

"February 17, vaccination apparently taking effect, measles appeared; will the vesicles be retarded? 18, vesicles advancing very slowly, measels retrograding; ordered a warm bath. 19, vesicles going on, but more slowly than is common; less redness around it; eruption of measles gone; will it recur? 20th, vaccine vesicle much larger; child feverish; warm bath. 21, at 7:15 o'clock in the morning, the child was seized with a severe general convulsion. He was seen by Dr. M. in about twenty minutes; a warm bath had been used. Wine of ipecac, and enemata, with cold lotions to the head, were at once resorted to, and subsequently, three grains of calomel with five of rhubarb were given. Aspect of the little patient pale and confused. At 1:45 o'clock p. m., he had another convulsive attack of rather greater severity. By previous direction, he was immediately placed in a warm bath, the body and limbs were well rubbed with the hands, and sinapisms were applied to the abdomen and to the feet; the face being colored and the scalp showing many turgid vessels, a large leech was applied to the left temple, and the wound was allowed to bleed for half an hour after the animal fell off. No more convulsions through the day. At 7:30 o'clock p. m., mustard was applied to the back of the neck. The night of the twenty-first was passed by the patient in quiet sleep. 25, very bright and well to all appearance, until about 9:30 o'clock, a. m., when he had another very severe convulsion, lasting several minutes longer than the two previous ones. He was seen fifteen minutes after the access of the fit; was found stupid, with an occasional wild look in the eyes; had been placed again in the warm bath. Mustard-water frictions to the extremities were continued; the head being rather hot, cold applications were cautiously made to it; one drachm of castor oil was given; discontinued the breast milk.

. Storer saw the patient at this time, and recommended Dovers powder, one eight of grain of the former to one half of a grain of the latter, every three hours. A continnce of the mustard-water frictions were also advised. Dr. S. believed that another ch might be needed. Dr. James Jackson, who had been sent for at Dr. M.'s request, sited the child shortly after, and gave a favorable prognosis. It was thought best by n to restrict the child's nursing to one minute's time every two hours; and, in the interls, to allow sugar and water. Dr. J. thought that although another leech might posbly, be required, he should be 'slow to apply it.' The remainder of the management as concurred in. The powders above mentioned were commenced, and the other means ntinued. There seemed a degree of amendment in the afternoon of this day, and there d been some good sleep. The night of the twenty-second was quietly passed; there as only one dejection; a little colicky pain from flatulence; no convulsive action. 23, aite well, seemingly; pulse 118, rather sharp (yesterday, 128 to 130); skin moist; one wder was taken at bedtime last evening, and another this morning. The vesicle of ccination has broken and dried into quite a large scab; it was full, yesterday. In the ternoon of this day the child seemed dull and stupid, possibly from fatigue; the lips d tongue somewhat swollen; suspended the regular use of the powders; renewed the ustard frictions, etc. He was now allowed to draw the breast during three minutes, t having nursed for three hours previously. Flatulence troublesome; relieved by int-water. 24, night quiet; had one dejection; got one powder about midnight; the es somewhat red; no signs of returning rubeolous eruption; tongue white; occasional lic. 25, nearly as well as ever. 26, same record. 27, a cervical gland, on the left le (that of vaccination), much enlarged; otherwise very well and lively. Discontinued sits. From the last date to the present time, there has been no untoward occurrence, e child seeming better even than before its illness.

"The supervention of measles upon vaccination, by the doctrine of chances, must be rare; purely accidental occurrence. The points of interest in this case are the evident mually retarding influence of the two affections thus coexisting; the modification of the ccine vesicle and of the eruption of rubeola by this action—not uncommonly witnessed der such, or similar, circumstances of complication—and, especially, the convulsions, to their *cause*. Dr. M. was at first inclined to ascribe these to the retrocession of the easles; but it will be noted that they were manifested upon the eighth day after vacnation, when the vesicle should be perfect and the primary febrile action is usually obrved—and consequently they may be more reasonably referred to the latter. This was r. Jackson's opinion. How much influence the conjunction of the two affections may ve had, however, can hardly be determined. In his recently-published volume, Dr. ckson gives an instance where convulsions took place in a child on the eighth day ter vaccination. Some time previous to this the patient had had pneumonia, which as ushered in by convulsions, and the same had occurred, also, during dentition. Dr had apprehended they might take place after the vaccination, and had forewarned e mother on the subject. He refers to other cases in which convulsions were observed children at the commencement of bronchitis and scarlatina, but mentions only one ter vaccination. In the case detailed above, there had not been any convulsions, preously, nor any threatening of them; there was, therefore, no reason to expect them.

"In this connection, the remark of Sydenham may appropriately be referred to 'that epileptic fit, in infants, is so sure a sign of small-pox, that if, after teething, they ve one, you may predict variola—so much so that a fit over night will be followed by e eruption next morning. This, however, will be generally mild, and in no wise conent.' (Works, Syd., Soc. edit., v. 2, p. 252.) Dr. Jackson also remarked 'that he beved convulsions are not rare in children, when the symptoms, so-called, of small-pox, st appear—corresponding to the eighth day of vaccination.' It would seem that the cident must be frequent after simple vaccination."—*Boston Medical and Surgical Journal*, *ne* 19, 1856.

Joler has described an epidemic of measles that took place in the Retzat ircle, in Bavaria, in the district where he himself resided. He says that ne disease was much milder among the vaccinated than among the unvacnated. Fifteen in fifty-two died among the non-vaccinated, while barely ne in three hundred died among the vaccinated, showing that measles as eighty-six times more fatal among the former than the latter.

As far as our knowledge extends, there are but few facts bearing upon ne question of the possibility of the transmission of the poison of measles long with the vaccine virus.

The experiments of several authors have shown that measles may be ransmitted by inoculating a sound person, either with the blood, with the uid of the accidental vesicles which sometimes complicate the eruption, r with the secretions of those affected with the disease.

Dr. Home, of Edinburgh, in 1758, appears to have been the first European physician who proposed and performed the inoculation of measles. His method of inoculation was to apply cotton dipped in the blood of a measly patient to a wound in the arm of the well patient. He describes the febrile symptoms as appearing on the sixth day, and of a mild character, with no secondary complications. (Clinical Facts and Experiments, 1858.)

Mr. Wachsel, of the Small-pox Hospital, in the early part of this century, inoculated successfully a lad with fluid taken from the measly vesicles. In 1822, Dr. Speranza, an Italian physician, in the territory of Mantua, repeated the experiments of Dr. Home, Professor of Meteria Medica in the University of Edinburgh. He inoculated six cases and afterwards himself, with the blood taken from a slight scratch in a vivid papula. In a few days the measles appeared, and went through their course mildly and regularly. This encouraged him to make further experiments, and he says they were all successful.

Dr. Von Katona, ot Borsoder, in Hungary, conducted an extensive series of experiments upon the inoculation of measles in 1842. He inoculated 1,122 persons, by taking the blood and fluid from the vesicles, or a drop of the tears from a patient laboring with the disease. The operation is said to have been performed in the same manner as the inoculation for small-pox; the infecting blood was drawn from the vesicles most effloresced. The puncture was immediately surrounded by a red areola, which soon disappeared. On the seventh day the fever set in with the usual premonitory symptoms of measles, as rigors and catarrhal symptoms; on the ninth and tenth day the eruption appeared; on the fourteenth desquamation commenced with decrease of fever and eruption; and on the seventeenth day from inoculation (seventh and sometimes eighth from eruption) the patients were in general convalescent and apparently well. Dr. Katona failed only in seventy-eight cases out of 1.112 (seven per cent.); and he affirmed that the resulting disorder was mild, contrasting favorably with the severity of the reigning epidemic. No deaths occurred among the inoculated. The fruitless and unsatisfactory experiments which have been performed at different periods for the purpose of testing the possibility of inoculating measles, cannot be adduced as evidence against these well-established facts, for a single successful inoculation is sufficient to overthrow any number of unsuccessful attempts.

Dr. George Gregory, in his valuable *Lectures on the Eruptive Fevers*, even goes so far as to express his belief that the child whose case he had detailed as having undergone cow-pox after measles, "received the germ of measles and of cow-pox at the same time; in other words, that unknown to me the child that furnished the lymph was incubating the measles, with the zuma or poison of which the vaccine matter had been impregnated."

The following is the case as recorded by Dr. Gregory:

Eliza Finch, aged four months, residing at Pentonville, was vaccinated by me at the Small-Pox Hospital, May 15, 1835. May 17 the child began to droop. Bilious vomiting, very severe, with drowsiness, succeeded. Much blood passed by stool. The head was very hot. Vomiting continued all that and the four following days. It ceased on the twenty-second. On the twenty-fourth the other febrile symptoms yielded a little. On the twenty-fifth (nine days from the invasion of symptoms, and eleven from the probable reception of the germ,) measles appeared and went through its course regularly.

Whilst the preceding facts, in the main, support the doctrine of Hunter, and show that where two poisons, representing two distinct contagious ex-

thematic diseases, act simultaneously upon the human being, the most vious pathological phenomena excited by the poisons will not occur simtaneously, but in succession, the one poison retarding the action of the ner, the one producing its cycle of changes, whilst the other remains rmant, as it were, during the action of the other, and immediately after e changes induced by the first cease, inducing its own distinct effects; the same time it must be admitted that the character and course of these ecific eruptive diseases are greatly modified by such altered states of the nstitution as exist in scurvy, scrofula and secondary syphilis.

In that class of diseases represented by constitutional syphilis and rvy, the whole mass of blood is at fault, and the nutrition is perverted, d the course and products of diseased actions are comparatively odified.

As all the nutritive processes are more or less deranged in scurvy and condary syphilis, and as it is now established that the blood in the latter ease is capable of reproducing syphilis when inoculated in healthy lies, and as we have shown that in scurvy the blood is so deteriorated d the forces so depressed, that the smallest injuries tend to degenerate o foul gangrenous ulcers, it is but reasonable to conclude, apart from ll-established facts, that the vaccine lymph would partake of the qualis and properties of the blood from which it is formed, and the parts by ich it is secreted. And even if the doctrine be maintained that the ccine matter, as well as all other special morbid poisons, have an unvary- chemical and physical constitution, the difficulty is not removed, as in practice of vaccination we are unable to separate the active agent of virus, from much extraneous matter, as lymph and blood. And we tend that it is impossible to open a living vaccine vesicle and draw tter for vaccination, without injuring to a greater or less extent, the icate blood-vessels, within and around the vesicle.

With reference to the concurrent action of the poisons of two contagious nthemata, upon the same system, we know nothing whatever of the te and mode of the existence of that poison which lies dormant whilst other is acting. Does it remain in the part where it has been inserted, does it exist as well in the blood, and effect those organs and tissues ich are not implicated in the action of the first?

Until the relations and effect of each exanthematous poison has been efully studied, and its effects determined upon the constitution of the od, upon the process of nutrition, upon the action of the nervous system, upon the chemical and physical phenomena of the body, as manifested re especially in the disturbances of circulation, respiration and calorifion, and excretion, it will be difficult if not impossible to settle such estions.

LATIONS OF CHICKEN-POX TO SMALL-POX—HISTORY AND PHENOMENA OF CHICKEN-POX (VARICELLA)—DIFFERENTIAL DIAGNOSIS BETWEEN VARICELLA AND VARIOLOID.

CKEN-POX (VARICELLA) CRYSTALLED — VARIOLA SPURIA — VARIOLA LYMPHATICA—VARICELLA VOLATICA—VARIOLA PUSILLA—EXANTHEMA VARICELLA.

Definition.—An eruption over the body, of semi-transparent glabrous vesi-, with red margins accompanying a slight attack of fever, seldom passing suppuration; but on the third day, bursting at their tips, concreting

into small puckered scabs, and leaving no cicatrices. The disease consists of a specific eruption, in a series of new crops usually appearing for several days in succession; so that dried and fresh vesicles are often alongside of each other, on the breast, back, face, and extremities, preceded by fever. The disease may be portracted for a fortnight or longer.

Changes of Temperature.—According to Thomas and other observers,* sometimes in the incubation stage of *varicella*, there are slight elevations of temperature, and at the time of the eruption in many cases the rise of temperature is very trifling. In the majority of cases, however, sometimes at the beginning of the exanthematic period and sometimes after a copious eruption had been developed, there is a sudden and relatively considerable elevation of temperature, sometimes indeed only a few tenths over 38° c., or about 101° F.; in rather severe cases 38.5° c. (101.5° F.) to 40° c. (104° F.); but seldom more. The high stage lasts from two to five days, and the fever is remittent, and as regards the height of the temperature corresponds pretty accurately with the copiousness of the eruption. The maximum temperature occurs sometimes in the first, but more often in the second half of the fastigium, and the morning remissions after the maximum were somewhat more considerable than they had been before. Defervescence was rapid and commonly over in half a day.

Under the name of chicken-pox, or *varicella*, have generally been comprised certain eruptions which closely agree in many features with each other, and which in some respects resemble small-pox. It is from this latter circumstance that they deserve a particular notice, as they are generally of so slight a nature as to require but little medical treatment. They were formerly very generally confounded with small-pox; but the difference between them was remarked as early as the beginning of the sixteenth century, by Vidus Vidius and Ingrassis. Sennery and Riveri, professors at Wurtemburg and Montpellier, at the commencement of the seventeenth century, and Diemerbrock, state that the distinction was well known in Germany, France and Italy, to the vulgar, who had a separate appellation for this eruption. Morton was the first in England to mark the difference, and to describe this disease under the name of "*chicken-pox.*" Since then it has been noticed by Fuller, and accurately described by Heberden. Heberden, however, continued to designate it by the term *variola pusilla;* whilst his cotemporaries, Vogel, Burserius and Sauvages, also applied to it the generic term, *variola*, with the specific designation of *volatica*, *spuria* and *lymphatica.*

Dr. Heberden must be regarded as the principal writer on varicella, who, in 1767, published in the first volume, page 427, of the Transactions of the Royal College of Physicians, a description of the disease, professing to give a full and accurate account, not only of its symptoms, but of its pathological relations; and for a long series of years this paper was looked upon as a standard authority on this disease.

In 1805, Dr. Frank, of Vienna, carefully distinguished the several kinds of spurious small-pox, and by way of distinction applied to them the names of *pemphigus varioloides*, *vesicularis* and *solidescens.* His description of the former disease corresponds accurately with the complaint hitherto called chrystal-pock, water-pock and chicken-pock.

In 1809 a detailed account of varicella was published by Dr. Heim, of Berlin, but much confusion is occasioned by his applying the same term to designate three kinds of spurious small-pox—the water-pock, the horn-

* Archiv der Keilkunde, 8, 376; Archiv fur Dermatologie and Syphilis, 1, 309. Temperature in Diseases, Dr. C. A. Wunderlich, New Sydenham Society, 1871, p. 311.

pock and the swine-pock. Dr. Heim affirmed that matter taken from a subject who has chicken-pox will only produce chicken-pox, and afford no protection from small-pox. He also states that the cicatrices left by varicella were different from those of variola, and that a careful inspection of them is alone sufficient to designate the one disorder from the other.

We find, upon careful examination, a similar statement as to the inoculability of chicken pox, in "*The Report on the Cow-pox Inoculation, from the practice at the Vaccine-Pock Institution, during the years* 1800, 1801 *and* 1802, *read at the general meeting of the Governors, February* 7, 1803, *at the Shakespeare Tavern; written by the Physician of the Institution; to which are affixed two painted engravings of cow-pox and other eruptions.*" London, 1803; p. 41.

The following is the detailed statements of the Physicians of the Cow-pox Institution, Drs. George Pearson, Lawrence Niholl and Thomas Nelson in the above mentioned report:

CHICKEN-POX OCCURRING DURING VACCINA, AT ANY PERIOD, AS WELL AS AFTER THE VACCINA.

2. CHICKEN-POX—Intervening cases have occurred of chicken-pox not only at all times during the cow-pock, but immediately after the scabbing process; as well as subsequently at a much later period. In this last respect of the chicken-pox after the formation of the scab, or at a later period of the cow-pock, there is a difference between the chicken-pox and small-pox. No differences was observed in the stages of the cow-pock, or of the chicken-pox, when the two diseases went on together; except that the cow-pock was sometimes a little retarded in scabbing.

In these instances there may be a constitutional affection for each of the diseases on different days, or they may occur together.

In one case, the chicken-pox and the vaccine pock were inoculated on the same subject, and both went on as usually distinctly."

Dr. Willan, in 1806, advanced somewhat our knowledge of varicella, by some observations published in the seventh and eighth edition of his work, (On Vaccine Inoculation, qt., p. 86). He therein describes with great minuteness, the appearance of varicellous eruption, which he subdivides into three varieties.

In 1820, Dr. Thomson, of Edinburgh, published his views on the identity of the chicken-pox of Morton and Haberden with small-pox, in his account of the varioloid epidemic of Scotland during the years 1818 and 1819.

This opinion of Dr. Thomson, which we have already presented in detail in a former portion of this inquiry, was nothing more than the revival of an old doctrine.

The learned Dr. John Thomson and Mr. Berard urged, in favor of this opinion, the circumstance of variola and varicella appearing from the same exciting cause, whether those affected have been vaccinated or not; and affirmed that persons exposed to the infection of chicken-pox have caught small-pox, and that the former appears only in those whose constitutions have been modified by the influence of either small-pox or cow-pox. On this subject M. M. Schedel and Cazenave remark, that in those epidemics which they have had opportunities of noticing in Paris, the several eruptions might be classed under three heads: 1, variola properly so-called; 2, the malady termed varioloid or variola modified; 3, an eruption purely vesicular, offering every appearance of varicella.

The same cause, namely, variolous infection, seemed to develop these several eruptions, which were observed in the same quarters, in the same streets, in the same houses. When the disease made its appearance among

a numerous family, some had small-pox, some modified small-pox, and others chicken-pox. One circumstance was striking to every one, namely, the mildness of the disease in those persons who had been vaccinated, and in the majority of those who had already had variola.

Whilst these facts appear to favor the old view, revived by Dr. Thomson, many cogent arguments have been urged against it by Abercrombie, Bryce, Luders, Fisher and others.

1. It is very difficult to determine, during a small-pox epidemic, whether the occurrence of that disease among individuals coming in contact with persons infected with the chicken-pox is rather the result of this communication than of the variolous infection, which, at that moment, develops on all sides.

2. Vesicular varicella, so-called, is not transmitted by inoculation, and never produces variola.

3. Those persons who consider chicken-pox as contagious have confounded it with modified small-pox.

4. Varicella appears in persons who have not been vaccinated, and who have never had the variola; consequently, in such cases, it cannot be regarded as a variola modified by the prior existence, either of the disease or of vaccination.

5. Vaccination practiced shortly after the disappearance of varicella, pursues its course in the most regular manner, which never happens when vaccination follows variola.

6. The progress of varicella is uniformly the same whether it occurs before or after vaccination, or after variola.

7. Variola sometimes reigns epidemically, without being accompanied by varicella; and on the other hand, the latter may become epidemic without being attended by the former.

In fact, the characters of the eruption, and the symptoms of varicella, differ essentially from those of variola.

Dr. John D. Fisher, of Boston, in his valuable work on small-pox, varioloid disease, cow-pox and chicken-pox, the first edition of which was published in 1829, gives an elaborate description of chicken-pox.

Dr. Fisher strongly advocated the doctrine that "the small-pox and the varioloid are one and the same disease, the latter being only a modification of the former, and that the chicken-pox is a separate and independent malady. * * All the observations that I have been able to make go to confirm the truth of this opinion. Indeed, the fact that the small-pox and the varioloid are capable of engendering each other, and that the chicken-pox has, year after year, prevailed epidemically in many of our towns in which the small-pox never appeared, and consequently without giving rise to it, settle the question concerning their identity."

Dr. John Hughes Bennett(1) held with Dr. Thomson, the opinion that chicken-pox was a modified form of small-pox; and this view has been more recently revived by Dr. Hamernjk, of Prague, and Professor Hebra. On the other hand many systematic writers of this day, as George Gregory,(2) James Copeland,(3) Felix Von Niemeyer,(4) J. F. Marson,(5) Edward Ballard (6) and William Aitken(7) regard the disease as wholly distinct from small-pox and varioloid.

(1.) Clinical Lectures on the Principles and Practice of Medicine, third ed., p. 976.
(2.) Cyclopaedia of Practical Medecine; Philadelphia, 1859, vol. 4, pp. 636–639.
(3.) A Dictionary of Practical Medicine; New York, 1855, vol. 1, pp. 369–371.
(4.) A Text Book of Practical Medicine; New York, 1869, vol. 2, pp. 560–562.
(5.) A System of Medicine, Reynolds; Philadelphia, 1879, vol. 1, pp. 124–127.
(6.) Vaccination, its Value and Alleged Dangers; a prize essay; London, 1868, p. 6.
(7.) The Science and Practice of Medicine; Philadelphia, 1872, pp. 421–424.

DESCRIPTION OF VARICELLA.

Under the name *chicken-pox* are included different varieties of eruption, enerally characterized by very slight and brief antecedent fever, consist-ng of vesicles or very imperfect pustules, which maturate and decline in hree, four and five days, occurring chiefly during infancy and childhood, ut also at adult age, and occasionally prevailing epidemically. The gen-ric term, *chicken-pox*, comprises three *species*, or, rather, varieties, which ave been distinguished from each other for very many years in America, nd in different parts of England, by the names of chicken-pox, swine-pox nd hives.

These Willan and Bateman distinguished, according to the form of their esicles, into: First, *Varicella Lentiformis;* second, *Varicella Coniformis;* nd, third, *Varicella Globularis.* Dr. Good adopted these names and dis-nctions, but added a *fourth*—the Varicella Corymbosa—the clustering or onfluent chicken-pox, which, if considered at all as a distinct variety, is ot of frequent occurrence, but has occasionally been observed by Bate-an, Ring and Copeland.

Anatomical Appearances.—The exanthema begins as small, red, distinct pots, which, after a few hours, are changed to liquid vesicles of the size of pea or lentil, by a copious serous effusion between the cutis and epi-ermis. These vesicles have neither a central depression nor a cellular forma-on. After a time these contents become whey-like, but never purulent, hin crusts form from the dried vesicles, which fall off after a few days. ithout leaving a cicatrix. From the form of the vesicles, the different areities, varicellae globulosa, ovalies, lenticulares, coniformes, and acu-inatae, are distinguished. We often see, especially when the eruption very extensive, that, besides numerous varicella vesicles running the sual course, a few filled with pus (varicellae pustulosae) acquire the ap-earance of variola pustules, and even leave cicatrices. Since the form of ariola pustules is not specific, but exactly resembles that of some erythma ustules, we should not attach too much importance to the external resem-lance of some of the efflorescences in varicella to those in variola, and onsequently consider the two diseases as identical.

Symptoms.—There are no symptoms to be noticed before the eruption, ey are absent or slight; headache and feverishness precede the eruption y a few hours; cough is sometimes observed.

Eruption Period.—The eruption appears within the first twenty-four hours indisposition, in the form of small sore spots, slightly accuminated; om ten to fifteen come out on the first day; they appear on any part of e body. The vesicle is preceded by a red spot or papule, due to hyper-mia of the cutis vera, and not to an exudation into it, for tension of the in causes the varicellous papule to disappear.

On the second day there may be a hundred or a hundred and fifty fresh pots; those of the previous day have the epidermis raised in the form of a eb, sometimes perfectly round, containing serosity as clear as water; there no inflammatory areola. The vesicles from the first have the size of split eas, and that size is soon attained or exceeded. The patient has the ap-earance of having been subjected to a shower of boiling water.

The vesicle is unicellular, not umbilicated, has a very delicate cuticle, nd when picked collapses perfectly.

The eruption occupies all parts of the body, the hairy scalp not excepted. he shape of the vesicles on the trunk is often oval, the long axis being hwart that of the body. Itchiness is common and impels the children to upture the vesicles.

The next morning a hundred or a hundred and fifty new spots will have appeared during the night, the eruption of the preceding day having become vesicular. The contents of vesicles which have lasted twenty-four hours become slightly milky; the turbidity however is uniform. A slight inflammatory areola appears. This nocturnal outburst of spots, which become vesicular within ten hours, is repeated for four of five succeeding nights from the beginning of the disease.

Many vesicles, as soon as they have attained their full size, get broken and so encrust at once. Those that remain unbroken present on the third, fourth or fifth day of their existence a small central scab, which quickly attains to the size of the vesicle in a day or two.

The scab is thin and granular; it falls in fragments, and leaves no enduring redness and no cicatrix. If the vesicles have been subjected to unwonted irritation, the scab may be thick, coherent, and may leave when it falls a permanent pit.

The following table presents a comparative view of the phenomena of small-pox and chicken-pox:

Table, Giving a Comparative View of the Phenomena of Small-Pox and Chicken-Pox.

SMALL-POX.	CHICKEN-POX.
1. The fever is ushered in by a cold stage, is severe and continues three or four days, and after declining or ceasing in the eruptive process, it commonly reappears during the suppurative stage, or between the fifth or eighth day of the eruption.	1. The fever is not often preceded by a cold stage, is uniformly light and is frequently insensible; it seldom continues more than two days, and never reappears after it has once ceased. When, however, the vesicles appear in successive crops, the fever lasts longer and continues until the eruption is completed.
2. The eruption is often preceded or accompanied by an erysipelatous efflorescence.	2. This efflorescence does not take place.
3. The eruption does not break out until the third or fourth day of the fever; it appears first on the face, then on the neck, chest, trunk and extremities, and is completed in the course of two days.	3. The eruption breaks out by the termination of the first or on the second, and almost invariably before the end of the third day of the fever; it usually appears about the breast and shoulders first, afterwards on the face and extremities. It frequently appears in successive crops for four or five days.
4. The eruption presents itself in the form of small red circular points or papulæ; these are hard, resisting and moveable, and communicate to the finger a shot-like sensation. They scarcely project above the surface, but are easily and distinctly felt by drawing the finger over them.	4. The eruption likewise breaks out in small inflamed spots, but these are not papular in their origin and are not exactly circular, but tend to an oblong figure. They may be distinctly felt by the finger, but they are yielding under it, and are destitute of the tubercular hardness and rolling motion which characterize the variolous eruption at the same period.
5. The eruption seldom becomes vesicular before the end of the second or the commencement of the third day, and the vesicles are confined to the summits of the pocks.	5. The eruption is vesicular from the beginning or from the early part of the first day, and by the second day the whole surface of the pocks are converted into vesicles which resemble little bladders of transparent fluid.
6. The pustules at first have accuminated summits; they aftewards become rounded, and at an early period present slight depressions in the centre of their surfaces.	6. The vesicles are usually lenticular in form, but are sometimes conoidal or globate, and present one shape through their course, or until they become ruptured.
7. Eruption is situated in the substance of the cutis.	7. Not formed in the true skin, but upon its surface, not in the cellular tissue between the skin and cutis.
8. The pustules after they have become vesicular are distinguished by hard, unyielding bases.	8. The vesicles are destitute of tuberculous bases, are yielding, and easily give way under pressure, and communicate to the finger a soft, elastic sensation, or a feeling similar to that which a minute globule of fine sponge softened with water would give rise to when pressed.
9. The pustules are composed of little cells, all of which communicate with each other; and the cuticular coverings of the pocks are opaque, tough and not easily broken.	9. The vesicles are composed of a single cavity, and the coverings are extremely thin and fragile, are diapthanous and very easily broken.
10. The pustules are at an early stage filled with a serous secretion; this after a time becomes converted into purulent matter that exhales a very unpleasant and peculiar odor.	10. The vesicles contain, when fully matured, only a whitish, transparent, serous fluid; this never, except through accident, becomes pus, and is destitute of any unpleasant odor.
11. The pustules remain whole until they are six or seven days old, when some of them commonly become ruptured, and permit a little of the virus to ooze out upon their surface; but they still retain their form and prominence.	11. The vesicles often become broken in two or three days after their appearance, and permit the whole of their contents to escape; their coverings then sink down and collapse, and the vesicles become flattened, or lose their original form.

SMALL-POX.	CHICKEN-POX.
2. The pustules break out simultaneously, pur- e a regular march and arrive at maturity about same time. Desiccation does not commence un- about the eighth day of the eruption. The pro- ss of eruption of suppuration and of desiccation nstitute three successive periods, rendered distinct m each other by their duration; the first occupies out three days, and the other two about five days ch.	12. The vesicles generally break out in successive crops for a number of days, in which case a great variety may be observed among them; some are appearing, whilst others are fully formed, shriveled or crusted. Desiccation commences on the fifth day, or as soon as the vesicles are ruptured, and sometimes on the second, third or fourth days. The three periods of eruption, suppuration and desiccation seem to be confounded in consequence of the pocks in successive crops, the time of their duration seldom exceeding eight days.
3. A general swelling of the cutaneous surface kes place just before the pustules begin to desic- e.	13. Desiccation is never perceived by any extensive swelling of the cutaneous surface.
4. The scabs fall off in a single piece. The sur- es of those who have had the disease remains spot- for a long time. The scars which remain per- nently in the skin are irregular in figure and pre- nt uneven surfaces.	14. The scabs do not usually fall off in a single piece, but in small fragments of different forms and sizes. The marks remaining in the skin after desquamation are but slightly colored, and the redness if apparent soon disappears. When scars are left in the skin by the vesicles they are regular and figure in present smooth surfaces.
5. The small-pox, even when distinct and of mod- te mildness, is a disease of fifteen or twenty days duration, and often proves fatal.	15. Chicken-pox runs its course and is completed in five or six days, or in eight or ten at the most, and it never of itself proves fatal.
6. Communicated by contagion and inoculation, varioloid or modified small-pox, the eruptions, for onsiderable time after the scabs have fallen, leave ile kernels or tuberculous elevations in the skin.	16. Not communicable by inoculation, as shown by Dr. Bryce. The chicken-pox never gives rise to true small-pox or varioloid, neither is it ever communicable by variola or varioloid.
7. The poison of small-pox, varioloid and cow-pox, a majority of cases, preserve the system from sec- l attacks of the same disease.	17. The chicken-pox when it prevails epidemically, attacks individuals who have never had the variolous and the cow-pox diseases, with equal readiness as it does those who have had neither.
8. Children have been attacked by *varicella* who ve been vaccinated, or had variola only a few weeks fore.	18. Varicella frequently occurs in children that have never been vaccinated, and its occurrence does not prevent them taking small-pox, nor prevent successful vaccination. Varicella must, therefore, be regarded as a specific disease.

ECTION IV.—DRIED VACCINE LYMPH, OR SCABS, IN WHICH DECOMPOSITION HAS BEEN EXCITED BY CARRYING THE MATTER ABOUT THE PERSON FOR A LENGTH OF TIME, AND THUS SUBJECTING IT TO A WARM MOIST ATMOSPHERE.

The effects of such decomposing matter, resemble those of the putrid atter received in dissecting wounds.

The practice of some physicians to mix a considerable portion of powdered ccine scab, with water on a glass slide, and to use this in a number of ccinations, from house to house, is not unattended with danger, especi ly during warm weather. The danger of this filthy procedure, is threeld. First, when the dried scab is used, the chances of communicating e vaccine disease by inoculation are lessened, and there is greater danger communicating other diseases through the medium of this dried mass of ıs, blood, lymph and cellular tissue. Second, when animal matter is ıely divided and mixed with water, and subjected to a temperature of ar summer heat, all the conditions are supplied for those active chemical anges, which in nitrogenized matters, frequently lead to the formation poisons, capable of exciting rapid and destructive changes in the living ganism. Third, in using matter from a common store, fresh blood is freıently conveyed from the patient vaccinated, upon the instrument or lan- t, to the vaccine mixture. The liability to putrefactive change is not ly increased by this mixture, but also the danger of communicating secdary syphilis, or any other disease capable of being transmitted by vacnation is augmented. When a score, or more, cases are vaccinated from

the same supply, and with the same instrument, if the greatest precaution is not employed, more or less blood from different individuals becomes mixed with the virus. The method so common in America, of vaccinating with the dried scab, should be performed with great care.

In the warm climate of the Southern States, it is especially difficult to preserve vaccine matter for any length of time, without more or less change and even putrefaction. The length of time which the vaccine virus will retain its active properties, will depend upon the temperature and moisture of the climate.

The true mode of preserving and propagating the vaccine virus, is that recommended by Jenner, viz.; the inoculation of the lymph directly from the arm at a period not later than the eighth day. By a succession of such vaccinations upon a number of children, transported for this purpose, Dr. Francis Xavier Balmis, Surgeon-Extraordinary to the King of Spain, imparted vaccination to many nations during his voyage round the world (1803–1806) executed for the sole purpose of carrying to all the possesions of the King of Spain beyond the seas, and to those of other nations, the inestimable gift of vaccine inoculation.

At an early day in the history of vaccination, Dr. Jenner made numerous attempts to send the vaccine virus to the most distant possessions of the English in the East. After the failure of the virus sent by ships to India twenty recruits, or men of any description who had not had the small-pox, should be selected; and a surgeon appointed to attend the successive vaccinations. Dr. Jenner thus engaged that the vaccine disease should be carried in its most perfect state to any English Settlements. Upon the rejection of this proposition by the government, he formed the plan of equipping and sending out a vessel to India with such arrangements and such a number of men as to ensure the continuous transmission of the vaccine virus, by private subscriptions, and put down his own name, for one thousand guineas. Before his design could be carried into execution, tidings arrived from the east, that Dr. De Carro had succeeded in forwarding vaccine matter from Vienna to Constantinople, and from thence to Bombay. The manner in which Dr. De Carro, (by whose unwearied labors the vaccine disease was first disseminated over Germany, Venice, Lombardy and other parts of Europe), transmitted the vaccine virus to India, possesses great interest at the present time, when so much carelessness is manifested by the profession both in the selection and in the preservation of the virus.

Many disappointments having arisen from the difficulty of transmitting it in an active state to distant countries, Dr. De Carro employed every expedient that ingenuity or experience could suggest to obviate them. Various methods had been tried. Impregnated lint, or threads enclosed between plates, or in bottles and in tubes closed up with wax. The practice of imbuing the points of common steel lancets was soon abandoned. To these succeeded lancets of silver, silver gilt, gold and ivory. After a series of trials Dr. De Carro gave the preference to ivory, which he considered to be, in all respects, the most secure vehicle for transporting the virus. On lancets of this material it was sent from Breslau to Moscow, where, under the patronage and actual inspection of the Russian Empress, it completely succeeded. As that which was destined for Bagdad would be exposed to the accidents of a long journey, in a climate heated by a scorching sun, he took special care to protect it as much as possible from external influence. He sent some on lancets of silver, silver-gilt and ivory; he also impregnated some English lint with the vaccine fluid, and enclosed it between glasses; and when he had properly secured them he dipped

em at a wax-chandler's till they formed a solid ball, which he enclosed in box filled with shreds of paper. In this state the packet was safely conyed across the Bosphorus, and passed over the whole line of deserts; id he had the satisfaction of hearing that, on its arrival on the banks of e Tigris, its contents were still liquid and succeeded on the first trial. It as received on the thirty-first of March, 1802, upon the banks of the gris, and before the end of June it had reached Bombay.

Dr. De Carro, in a letter to Dr. Jenner, dated Vienna, April 22, 1803, us describes the method which he had employed for the preservation of e vaccine virus:

"I do not know whether you are well informed of the great improvement which MM. Ballhorn and Stro yer have made to the glasses invented by you. They have taught us a simple and easy manner to pre ve the vaccine lymph fluid during an indefinite term. The Hanoverian vaccinators take a small bit of glish *charpie*, which you call, I believe, *dry lint*. The quantity must be, of course, equal to the concavity the glass. The pustule then is punctured by a circular or half-circular incision with the lancet, so as to en a greater number of the cells forming the vaccine pustule covered with the same pellicle. The lint is plied upon the pustule on the most wooly side, so as to act better as a syphon. It pumps in a very short ie a sufficient quantity of vaccine fluid to saturate it as completely as if it had been dipped in a glass of ter, particularly if the lint is now and then gently pressed with the point or back of the lancet. When it quite full you take it with the lancet and place it carefully in the cavity of the glass; you put a drop of or a little mucilage, upon the internal surface of the glasses; you make the flat bit of glass slide upon *charpie*, so as to exclude the air as much as possible; you tie the two bits with thread, and seal the ges. To prevent the access of light I commonly fold it in a black paper, and when I was desired to send o Bagdad, I took the precaution of going to a wax-chandler's, and surrounded the sealed-up glasses with much wax as to make balls. With this careful manner it arrived *still fluid* on the banks of the Tigris." *ife of Edward Jenner, vol.* 1, *pp.* 420, 430.)

The method so extensively employed in America, of preserving the entire ab after it separates from the arm, by enclosing it in wax, is not only less liable than the method practiced by Drs. Jenner and De Carro and others, it it is attended with greater danger, from the changes induced by heat id moisture.

Shortly after the introduction of vaccination into the United States, by r. Waterhouse, ignorant persons, in New England, not of the medical ofession, who were stimulated by avarice to carry on a traffic in vaccine atter, obtained the shirt-sleeves of patients which had been stiffened by e purulent discharge from an ulcer consequent on vaccination. These ey cut into strips, and sold about the country as impregnated with the ne vaccine virus. Several hundred persons are said to have been inoculted with this poison, which in some cases produced great constitutional sturbanee.

ECTION V—THE MINGLING OF THE VACCINE VIRUS WITH THAT OF THE SMALL-POX—MATTER TAKEN FROM THOSE WHO WERE VACCINATED WHILE THEY WERE LABORING URDER THE ACTION OF THE POISON OF SMALL-POX, WAS CAPABLE OF PRODUCING A MODIFIED VARIOLA, AND COMPARATIVELY MILD DISEASE IN THE INOCULATED, AND WAS CAPABLE OF COMMUNICATING BY EFFLUVIA SMALL-POX IN ITS WORST CHARACTER TO THE UNPROTECTED—OBVERVATIONS OF DRS. JENNER, WOODVILLE, ADAMS, WILLAN, GREGORIE, HENNEN, FOWLER AND BOUSQUET, UPON THE RELATIONS OF THE VACCINE DISEASE AND SMALL-POX.

In more than one instance small-pox was disseminated, by vaccination ith what was considered as vaccine virus. In all such cases e virus was obtained from patients who were laboring under

the action of the poison of small-pox, at the time of the insertion of the vaccine matter. Some cases of small-pox were said to have originated from the employment of small-pox scabs, which had been sent through the lines by the enemy as good genuine vaccine matter. As far as my knowledge extends, such accidents did not arise from the willful and malicious dissemination of small-pox matter, as was charged publicly through the newspapers; but they were referable to the careless employment of vaccine matter derived from patients in small-pox hospitals, or from members of households vaccinated after small-pox had appeared in their midst, and consequently after the introduction of poison into their systems.

Such accidents are by no means new to the profession, for, more that half a century ago, they had well nigh proved fatal to the infant cause of vaccination. Many of the patients experimented upon, by Dr. Woodville, at the Small-Pox Hospital in London, were not only exposed to a variolous atmosphere, but they actually had small-pox matter inserted into their arms on the third and fifth days after vaccination. Dr. Jenner had positively asserted that pustules do not belong to the cow-pox: Dr. Woodville, on the contrary, affirmed that three-fifths of the patients whom he had inoculated with vaccine matter, had pustules not to be distinguished from variolous ones. Dr. Woodvile, in an interview which he held with Dr. Jenner on the twenty-third of March, 1798, mentioned that the cow-pox had been communicated by effluvia, and that the patient had it in *the confluent way.* Dr. Jenner is said to have remarked on this marvellous occurrence, "Might not the disease have been the confluent small-pox communicated by Dr. Woodville, as *he* is always full of the infection?"

Such careless experiments as those of Dr. Woodville, conducted in a *small-pox hospital!* excited the strongest feelings of disappointment among the principal medical men of London, and for a season threw doubt upon the accuracy of Dr. Jenner's statement. And it was only after careful investigation that Dr. Jenner was able to demonstrate *that the London cow-pox was somehow or other compounded with small-pox.*

This contaminated matter from the London small-pox hospital, was distributed to different parts of the country by Dr. Pearson, and caused most unpleasant accidents. Some of this contaminated matter fell into the hands of Mr. Andre, Surgeon at Petworth, and fourteen persons who were inoculated with it had variolous eruptions and in some cases suffered severely. Lord Egremont wrote a long letter on this occasion to Dr. Jenner, detailing the occurrence at Petworth. The reply of Dr. Jenner to this letter is worthy of careful consideration, in the light which it throws upon similar accidents occuring during the recent war.

DR. JENNER TO LORD EGREMONT.

My Lord—I am extremely obliged to your Lordship for your kindness in giving me so fully the account of the late inoculation at Petworth; a subject which, before, I did not clearly understand; and which, of course, had given me much vexation. I will just briefly lay before you part of the history of the cow-pox inoculation since my experiments were first publicly made known, which may tend in some measure to explain in what manner pustules may be produced.

About a twelvemonth ago, Dr. Woodville, Physician to the Small-pox Hospital, procured some virus from a cow at one of the London milk farms, and inoculated with it several patients at the Small-pox Hospital. Fearful that the infection was not advancing properly in some of their arms, he inoculated them (some on the third, others on the fifth day afterwards,) with small-pox matter. Both inoculations took effect; and thus, *in my opinion*, a foundation was laid for much subsequent error and confusion; for the virus thus generated became the source of future inoculations, not only in the hospital, but in London, and many parts of the country.

Hearing a murmur among medical people that the cow-pox was not the simple disease I had described, but that in many instances it produced as many eruptions and was attended with as much severity as the small-pox, I went to town with the view of inquiring into the cause of this deviation. Dr. Woodville at once invited me to the Small-pox Hospital, and very ingenously told me the whole of his proceedings.

The inoculated patients were shown to me, and though some were without eruptions and exhibited the appearance of the true cow-pox, others were very full of them, and I could not discern any differences between them and the perfect small-pox. I therefore did not hesitate to tell the Doctor that it clearly appeared to me that the small-pox had crept into the constitution with the cow-pox; that I did not consider them as two

distinct diseases, but as *varieties* only of the same disease; and therefore they might co-exist in the same constitution, and that thus a mixed disease had been produced. I communicated also the same sentiment to Dr. Pearson, who was then, and had been, busily employed not only in inoculating from this source, but in dispensing threads embued in the virus to various places in our own country, and to many parts of the continent. Forseeing what was likely to ensue from these hasty measures, I remonstrated against them, but was not listened to. In many places where the threads were sent a disease like a mild small-pox frequently appeared; yet, curious to relate, the matter, after it had been used six or seven months, gave up the variolous character entirely, and assumed the vaccine; the pustules declined more and more, and at length became extinct. I made some experiments myself with this matter, and saw a few pustules on my first patients; but in my subsequent inoculations there were none. From what I once saw at the hospital, I had reason to think that some of these threads sent out were not only stained with small-pox matter from the contamination spoken of, but that they had sometimes a dip in a real small-pox arm; as the patients were all mingled together at the hospital, and stood with their arms bare, ready to afford matter one among another. Without making any further trials with matter from the cow managed in another way, Dr. W. published a volume containing the result of his practice, which certainly dampened the spirits of many who had from my representation taken up a high opinion of the cow-pock inoculation. A thought now struck me that, if possible, it would be proper to procure matter from a London cow, and compare its effects with that generated in the country.

Unwilling to determine in a hurry, I procured matter from a London cow, conceiving it possible that the animal in this situation might generate matter possessing qualities differing in some measure from that which is more in a state of nature in our meadows here; but the result convinced me that the virus was the same, as 500 people were inoculated from this source without the appearance of any pustules. But this history, my lord, does not tell you by what means the pustules appeared at Petworth; but it informs you how errors may arise, and how they may be persisted in, There is another source which I fear will be too common. Lancets are often carried in the pocket of a surgeon with small-pox dried upon them, for the purpose of inoculation. A gentleman some time ago sent a lancet here to have it charged, as it is called, with cow-pox matter; perceiving it stained at the point with some dried fluid, it was sent back, when he immediately recollected that his lancet was prepared with the matter of the small-pox. What confusion might have happened from this; and how narrowly we escaped it! For it was but an equal chance, probably, that had the lancet been used a direct small-pox might have been produced, for the chances were equal whether it produced one disease or the other.

It may be necessary to observe, it is improbable that a mixture of the two matters used in this way would have produced a mixed disease, as two different diseased actions cannot go forward in one and the same part at the same time, so that the disease would have been either the perfect cow-pox or the perfect small-pox.

The matter which was made use of, I hear, came from Dr. Pearson; and doubtless Mr. Keate will have candor, and, I hope, industry enough to trace the error to its source. That there was error somewhere, of which Mr. Keate became the innocent cause, is a fact that I think will not admit of controversy. I have sometimes seen, perhaps in one case in a hundred, a few scattered pimples about the body and sometimes rashes; but these have arisen from the inflammation and irritation of the arm, for it is very well known that many acrid substances, applied to the skin, so as to produce local inflammation, will frequently occasion a similar appearance.

This letter, in which Dr. Jenner announces the doctrine held and taught by his friend John Hunter, (viz., two diseased actions, cannot go forward in one and the same part, at the same time), is important not only in the demonstration which it affords of the transmission of both small-pox and cow-pox, at the same time, through the same mass of matter, but it also contains a strong argument for the view held by Jenner that these were not distinct disease, but only *varieties* of the same disease.

Dr. Adams, in his work on Morbid Poisons, gives the following interesting and important observations, which confirm the correctness of the views of Dr. Jenner.

"It is to be hoped that a very correct attention to the processes of variolation and vaccination will enable us to ascertain the exact analogy which exists between the two morbid poisons evidently distinct, yet not entirely separated by those laws which we have to trace in others. The correspondence in the laws of each—the peculiarities in which they differ—the manner in which they interrupt each other's action, and the manner in which they may be made to act in concert, are all equally interesting, and the daily subjects of experiment and observation. At present the following may be considered as established facts:

"Each, when inserted, requires about the same time to produce its local effects.

"A subject, that has regularly passed through either, is insensible to the future constitutional effects to the variolous poison.

"Each will produce secondary eruptions, having the same property of infecting as the primary; but the secondary eruptions appear more than ninety-nine times in a hundred in small-pox, and not once in three hundred, if the skin is otherwise entire, in the cow-pox.

"In the small-pox, secondary pustules appear whilst the primary is advancing, and maturate two or three days after them. In cow-pox, when secondary vesicles appear, it is not till the primary has begun to scab.

"The small-pox may infect by the effluvia, the cow-pox can only be communicated by the scretion from the local infection.

"When these poisons are inserted at the same time in the same part of the same subject, by mixing the secretion of each, only one will produce its effect.

"When inserted separately in different parts of the same subject, each will produce its local effect, and at the same time.

"If cow-pox is inserted at the same time that the subject is exposed to a vitiated atmosphere, the former will supersede the effects of the latter. If inserted four days later, the effect will be less certain, but as far as can be ascertained, not more uncertain than the variolous insertion." (Adams on Morbid Poisons, pp 10-16.) Dr. Adams gives several instances to show that the vaccine and variolous diseases may be confounded in certain cases, that is, that the laws peculiar to one may occasionally influence the other. (See pp. 16-20.)

"The invaluable Jennerian discovery has introduced us to a morbid poison, the properties of which are different from all others that we are acquainted with in superseding the constitutional susceptibility to another. As such a law as this is unknown in any other two morbid poisons, we might suspect the analogy between these two would be clearer than between any other two. We might even expect that the characters of the two might be altered by applying both at the same time, and also that the phenomena of one might imitate the other in such a manner as to render the distinction between the two often doubtful. It is, therefore, rather a matter of surprise that the distinction should be so regularly reserved, and the laws which separate other morbid poisons so rarely infringed.

"The next thing I would remark is that small-pox and cow-pox, contrary to the law of all morbid poisons, which are different in their action, will proceed together in the same person without the smallest interruption of each other's course. If inserted nearly at the same time, in the same person, each proceeds in the same course as if it were in two different subjects; if inserted nearly in the same spot, the two form one common areola, but the vesications are distinct, and each preserves its own character, till that of small-pox becomes purulent from suppuration for the separation of the slough. If secondary pustules follow from the small-pox, and they should continue coming out till the cow-pox has completed its progress, its vesicle, like any other inflamed part, will become the seat of a small-pox pustule, or the whole vesicle will become purulent, contrary to its legitimate character. In the first case, you may take small-pox matter from the pustule, which, by the adhesive inflammation, will remain distinct from, though seated in part of the vaccine vesicle; and from the other parts of the vesicle you may take the vaccine matter, and each will perpetuate its respective morbid poison. If the whole vesicle becomes purulent it is a variolous pustule, and will inoculate small-pox.

"It was remarked by Dr. Woodville that if a person is inoculated with small-pox to-day, and three or four days after is reinoculated with the same morbid poison, though the last insertion may remain a smaller pustule than the first, yet both inoculations will arrive at their height at the same time. The same takes place in cow-pox; and also, if a person is inoculated to-day with cow-pox, and three or four days after with small-pox, or to-day with small-pox and three or four days after with cow-pox, the two insertions, though the last may remain smaller than the first, will maturate and scab at the same time.

"By these facts it appears, first, that a marked kind of small-pox may be perpetuated. If, therefore, the cow-pox is a marked kind of small-pox, there can be no reason why it should not have been perpetuated with its true character; and that the cow-pox is such, appears, secondly, by its not being interrupted by, and not interrupting the progress of small-pox, and by both retaining their respective laws and characters at the same time, whether inoculated separately in different subjects, or the same; or if each has been inoculated in the same subject at different times, the consequence is similar to the inoculation of either one, at different times.

"These experiments have been repeated so often, as to leave no question concerning the law. The same experiments have been repeatedly tried with small-pox and measles, and also with cow-pox and each of the others, yet these interruptions have always followed, which have been remarked in the early part of the work.

"As, therefore, a marked variety of small-pox is capable of preserving its distinct character under inoculation, there seems no reason why the cow-pox should not be among such varieties; and as any of the known varieties will destroy the susceptibility to the disease in all other forms, so there is no reason why cow-pox, if among the varieties, should not do the same; and there is the more reason to expect this, because, contrary to any morbid poisons, the action of small-pox and cow-pox are maintained at the same time in different parts of the constitution, subject respectively to similar laws, whether only one or both of them are applied in any variety of forms.

"It may be said that small-pox is an eruptive disease, whilst cow-pox, though affecting the constitution, is only confined in its local action to a single part. But small-pox is sometimes, we have seen, equally confined in its local action, and principally in those cases in which its appearance most resembles cow-pox. It is not less certain that cow-pox, on some occasions, produces secondary eruptions. Besides the cases I have seen myself, the Rev. Mr. Holt (*Med. and Phys. Journal*) gives an account of full eruption

f vesicles, which had the same properties of contagion as the inoculated part. The Rev. Mr. Fermn saw a few scattered in different parts." (*Adams on Morbid Poison*, pp. 98–401.)

Dr. Willan found "that when a person is inoculated with vaccine and variolous matter about the same time, (that is, not exceeding a week,) both inoculations proved effective, for the vaccine vesicle proceeded to its acme in its usual number of days, and the maturation of the variolous pustule was attended by a variolous eruption on the skin." (On vaccine Inoculation, p. 1.)

When cow-pox is inserted during the incubative stage of the casual small-pox, while the small-pox is still latent, the vaccine vesicle for the most part does not advance, or advances tardily and imperfectly. There are exceptions, however, to this rule, and cow-pox and casual small-pox may sometimes be seen running their full course at the same time. In no case, however, does the cow-pox so inserted alter or modify the course of the small-pox. When the variolous and vaccine fluids are inserted into the arms on the same day, each disease occasionally proceeds, preserving its original character. At other times, however, they mutually restrain and modify each other. The vaccine vesicle is smaller than usual, and irregular in its progress, while the variolous pustules which follow are of the kind denominated *variolae verrucosae*, vulgarly swine-pock, stone-pock, or horn pock (*Willan on Vaccine Inoculation, p. 5*); that is to say, they are hard and shining, surrounded with little inflammation and they suppurate imperfectly. The small quantity of matter they contain is absorbed, leaving the cuticle horny and elevated for many days afterwards. Upon the extremities the eruption does not pustulate at all, but is minute and papulous, and terminates by desquamation. It will be found in most cases that even though the eruption be modified in its character, there is, nevertheless, considerable disturbance of the general system under the joint influence of the variolous and vaccine poisons.

Dr. Woodville has said that if the cow-pox matter and the small-pox matter be both inserted in the same arm of a patient, even within an inch of each other, so that on the ninth day the same efflorescence becomes common to both the local affections, nevertheless inoculating from the cow-pox tumor the genuine vaccine disease will be produced (*Observations on the Cow-pox, p. 12*); but if the inoculation be performed with a mixture of the two matters, then the chance is equal that small-pox or cow-pox will be the result, or the varioloid disease.

When the insertion of the vaccine lymph *precedes* that of the variolous by a period not exceeding four days, both diseases advance locally. Sometimes an eruption of small-pox papulæ follows. At other times the variolous fever is slight and unaccompanied by eruption. Under these circumstances matter taken from the primary vesicles shall sometimes communicate cow-pox and small-pox respectively, but more commonly the variolous poison predominates, and contaminates the lymph of the vaccine vesicle. It was ignorance of this phenomenon, in the mutual action of the vaccine and variolous poisons, which occasioned Dr. Woodville's mistakes at the small-pox hospital in 1799.

Variolous matter inserted into the arm at any period not exceeding a week from the date of vaccination will take effect and be followed by a pustule. After that time no effect is produced.

When small-pox inoculation precedes by three or four days the insertion of vaccine lymph, the vaccination advances, but after the tenth day the fluid in the vaccine vesicle becomes purulent; and in that state will communi-

cate small-pox. (Willan on Vaccine Inoculation, p. 8; also Dr. George Gregorie's valuable article on Vaccination in the Cyclopædia of Practical Medicine.)

Dr. Denby, whilst admitting that the period of incubation of variola may be somewhat undefined, as in the case of other animal poisons, concludes that, nevertheless, from experiments, a fair conclusion may be formed as to the usual period of this incubation, when prophylaxis may be induced. And from these Dr. Denby judged that, if on the third day, before the onset of erethism, rigor, and headache, perfect lymph be inserted, prophylaxis is almost certain, assuming three or four days for the premonitory symptoms before the variolous point or papula appears. The vaccine vesicle will then be eight or nine days old, the areola will be becoming indurated, and erethism will exist. Dr. Denby considers that in this fever against fever, the essence of prophylaxis really exists. If under this influence the variolous papula proceeds, it will resemble umbilicated varicella or horn-pock. If the vaccine be used two days later, especially if there be bronchial or pulmonary symptoms present, it will be useless. The papula may be just apparent, but it will be blighted. There are, of course, exceptions to this rule. A woman was delivered, says Dr. Hennen, while suffering from confluent variola; the infant was vaccinated a few hours after birth. The mother died on the eleventh day; the infant had true vaccine and lived. *Med. Times*, October 25, 1851.)

In an analagous case, reported by Mr. T. C. Beatty, of Durham, the child delivered from a mother in whom the variolous pustules made their appearance during labor, was not vaccinated until the morning of the fourth day after its birth. True vaccine was the result; and yet, on the eighth day after she was vaccinated, when the vesicles were fully matured, the little patient was very ill, and showed signs of eruption under the skin, which proved to be *confluent* small-pox, of which the little creature died four days after. (London Lancet, 1852.)

Dr. Robert Fowler, of the Loughborough Dispensary, and Mr. Robert Tod, of Gilmore Place, Edinburgh, (London Lancet, 1852); MM. Herard and Bousquet, (L'Union Médicale, Nos. 108, 109, 110, Bulletin de Thérapeutique, tome 35, pp. 342-52), and others, have recorded cases proving the possibility of the simultaneous existence of small-pox and the vaccine disease, and confirming the correctness of the conclusions of Jenner and the older observers.

M. Bousquet goes so far as to deny that the two eruptions, variola and vaccinia, exert any reciprocal reaction, and the nearer they appear together, the more independent are they of each other. Suppose for example, that they could appear at the same hour, then each would pursue its ordinary course, just as if the other were not present. But supposing the one eruption appears after the other, all will depend upon the space of time separating them. If this be only some hours, or even two or three days, all passes on as just stated. The case is different when one of these eruptions is greatly in advance of the other. If this is not to such an extent as to exclude, the eruptions progress together, but not in parallel. The most advanced always keeps its advantage, and finishes at its ordinary epoch, without having undergone any change in form or duration. The other follows it at a distance, but after the variolous capacity of the subject has become exhausted by the first, the second dies away.

In these influences, M. Bousquet considers that there is nothing direct, active or special; they are the consequences of the faculty possessed by the eruptions of supplying or substituting each other. The vaccinia does not

crest the variola, but it is the variola that stops short in the face of the accinia: and, conversely, variola does not cut short the course of vaccinia, but this last interrupts its own course in presence of the variola. It the right of precedence, and the more widely the two eruptions are parated, the more readily do they exclude each other, while the nearer ney are together, the more independently do they proceed. Considered themselves, the vaccine and variolous virus are so little capable of destroying each other's energy, that if they are mixed together, and inoculation performed with the mixture, M. Bousquet affirms that two perfectly distinct eruptions may be produced.

Considered as regards their effects, therefore, according to this view, it cannot be said that vaccinia *cures* variola, or even, rigorously speaking, *prevents* it. It takes its place, stands in its stead, and is neither more nor less than a substitution. Thus, so far from explaining the operation of vaccinia by the supposed opposition it offers to variola, we would rather do so by the analogy and reciprocal action of the two diseases. (Bulletin de thérapeutique, tome 35, pp. 342-52; also, the British and Foreign Medico-chirurgical Review, April, 1849.)

From the facts recorded in this section, we deduce the practical conclusions:

First—That vaccine matter derived from the patients of small-pox hospitals, or from those in civil or military practice who have been exposed to the contagion of small-pox, should never be used for the propagation of the vaccine disease.

Second—The vaccine disease is not a distinct disease from small-pox, but a variety or modified form of the variolous affection.

SECTION VI.—DRIED VACCINE LYMPH OR SCABS, FROM PATIENTS WHO HAD SUFFERED WITH ERYSIPELAS DURING THE PROGRESS OF THE VACCINE DISEASE, OR WHOSE SYSTEMS WERE IN A DEPRESSED STATE FROM IMPROPER DIET, BAD VENTILATION, AND THE EXHALATIONS FROM TYPHOID FEVER, ERYSIPELAS, HOSPITAL GANGRENE, PYÆMIA, AND OFFENSIVE SUPPURATING WOUNDS—DR WM. GERDNER, OF GREENE COUNTY, TENN., ON THE RELATIONS OF ERYSIPELAS TO VACCINATION—CASES OF ERYSIPELAS FOLLOWING VACCINATION—VIEWS OF DR. PAUL F. EVE, ON THE POSSIBILITY OF INOCULATING ERYSIPELAS BY VACCINATION—DR. J. C. NOTT, OF MOBILE, ALA., ON ERYSIPELAS—REPORT OF DR. J. F. BELL, OF VIRGINIA—REPORTS OF SURGEON HUNTER McGUIRE OF VIRGINIA, AND OF OTHER PHYSICIANS.

In several instances during the revolution death resulted from phlegmonous erysipelas following vaccination in apparently healthy patients, in both civil and military practice.

It was believed that in some cases the poison of erysipelas was conveyed along with the vaccine virus.

In one instance which came to my knowledge, the lives of several negro women and children were destroyed by erysipelas excited by vaccine matter taken from the same scab, and a stout healthy white man who was vaccinated with the same matter, and by the same physician who vaccinnaated the negro (on a neighboring plantation), was extremely ill from the effects of the poisonous matter, and barely escaped with the loss of a large portion of the muscles of the arm.

I was informed upon good authority that the matter caused the death of a pregnant negro woman, and of another negress and her young infant, of some week or ten days of age, at the time of the inoculation of the vaccine virus.

The following observations relating to erysipelas following vaccination, were placed in my hands, by Dr. Frank A. Ramsay, of Memphis, Tennessee:

COMMUNICABILITY OF SYPHILIS BY VACCINATION. BY WILLIAM GERDNER, M. D., OF GREEN COUNTY, TENNESSEE.

I notice in the Medical and Surgical Monthly, June, 1866, an article taken from the Richmond Medical Journal, June, 1866, by William Fuqua, M. D., Appomatox County, Virginia, on the communicability of syphilis by vaccination.

About the same time referred to by Dr. Fuqua, I had numerous cases of vaccination, in the district of my practice, presenting abnormal features. The people believed it to result from syphilis, and called the exhibitions by that name. I made close scrutiny of the cases occurring under my observation, and concluded that they were not syphilitic in origin or manifestation. I regarded them as erysipelas, presenting the form called phlegmonous, for which opinion I thought I had reasons. Many cases assumed the form of common erysipelas, invading limited portions of the arm, and in some few cases the whole surface of the vaccinated limb was affected.

The proper distinction for the practical physician of erysipelas, is superficial and deep-seated—ordinary or common erysipelas affecting the cuticle proper—deep seated or phlegmonous erysipelas involving the tissues, particularly the cellular. At present the cause of the difference is inexplicable—why in one case serum, and in the other lymph is poured out, remains a question, while the fact exists. Each distinct inflammation has its habits.

As far as my knowledge extends, the records of medicine do not afford any very large collection of cases of erysipelas supervening upon vaccination. The following are the most important cases of the apparent excitation of erysipelas by vaccination, which were noted in the works and journals consulted during these researches:

Diffuse Cellular Inflammation following Vaccination.—The first was that of a female child, aged five years, who had been vaccinated by a respectable practitioner in Dublin. This child was brought to the physician who reports these cases, about three weeks after it had been inoculated. The arm was then greatly swollen, the swelling extending to the hand; the integuments of the upper arm were of a dusky leaden hue, and a large black slough occupied the situation of the usual crust of the vaccine vesicle. The child's pulse was weak and slow, not exceeding sixty-four. The extremities were cold, tongue dry and coated. There were extensive sloughing and hemorrhage from the mucus membrane of the mouth. The integuments of the cheeks adjoining the commissure of the lips were of a livid hue. The respiration was very much hurried, but no physical sign of disease could be detected in the chest.

The child's parents stated that these formidable symptoms first presented themselves, between the ninth and twelfth day from that on which it had been vaccinated. The practitioner who inoculated the child affirmed that up to that period, the vaccine vesicle ran a healthy course and that he had vaccinated other children with the same lymph in whom the course of the vesicle was perfectly regular. This child was of a delicate constitution, having suffered with attacks of scrofulous ophthalmia, pneumonia, and bronchitis. Its health was said to be good, at the time it was inoculated. Complete recovery, though very slow, was effected in this case by the use of mild tonics and stimulants.

The second case was that of a male child, aged eighteen months, who was also vaccinated by a physician of Dublin. About the twelfth day from the period on which it was vaccinated, the arm was attacked with severe inflammation of the erysipelatous character, the vaccine vesicle having, up to that day, according to the statements of the parents, run a regular course. On the sixteenth day, a dark slough, as large as a shilling occupied the situation of the vesicle; the entire extremity was immensely swollen; the

teguments of the upper arm were of erysipelatous redness, and such of them as were the immediate neighborhood of the slough were quite livid. The attending fever was the inflammatory type, the skin being hot, tongue furred, pulse rapid and full, and e thirst great. Until the fever was subdued by cooling and alterative medicine, and e local inflammation relieved by the application of poultices and formentations, the oughing spread with the most alarming rapidity. After the sloughs had separated, and e progress of the gangrene arrested, a large and deep ulcer remained with undermined ges, at the bottom of which the muscles of the arm could be distinctly observed; so tensive was this ulcer, that it was not healed for three months, though the case pro-essed most favorably in every respect."—*Dublin Journal of Medical Seiences*, 1844.

Dr. Greene reported to the Boston Society for Medical Improvement, a tal case of erysipelas, following re-vaccination, which occurred in nuary, 1846.

The patient, a gentleman sixty-four years of age, had been vaccinated twenty years fore, and re-vaccinated, though without success, two or three times since. On Friday, e day after the re-vaccination by Dr. Greene, he was seized with chills, nausea, and a nse of general uneasiness; and, at the same time, inflammation commenced in the arm, tended by heat, redness, and pain. He slept none on the following night, and on the xt night was attacked with vomiting and purging. The symptoms from this time did t become materially worse, however, till the following Wednesday, when he complained pain just below the elbow; and on Thursday, a small patch of erysipelas was discov-d at this point, which gradually extended over the arm and chest of the affected side, e infiltration of the cellular tissue, keeping about two inches ahead of the redness. He d at ten on Friday evening, a little more than eight days from the time of re-vaccina-n, the erysipelas having extended to within two inches of the sternum. In regard to e quality of the matter introduced, Dr. Greene remarked that it was taken on the eighth y from a perfectly formed vesicle, on the arm of a perfectly healthy infant, born of althy parents; that one of his own children had been vaccinated with the same matter, d also another person, in both which cases, the symptoms and appearances were ght.

It is said that in 1849 and 1850, erysipelas so frequently followed vac-nation in Boston, and the result was so often fatal, that many physicians fused to vaccinate, except when it was absolutely necessary, and almost tirely abandoned re-vaccination. Cases were reported to the Boston ciety for Medical Improvement, by Drs. J. B. S. Jackson, Cabot, Bige-w, Homans, Putnam and Channing. From the transactions of this so-ty we select the following cases:

Case Reported by Dr. Cabot.—This being a case rather of diffuse cellular inflammation n common erysipelas. The patient was a gentleman, sixty-nine years of age, who ving been exposed to varioloid, was re-vaccinated in two places on the third of April. the second day, two vesicles had formed about the size of a small pin's head, and ere was pain in the axilla, with pain and soreness under the pectoral muscles. In out two weeks the inflammation had extended to the hand, and in the course of the rd week an opening was made about the elbow, from which a considerable quantity sero-purulent fluid was discharged; the back of the hand being opened down to the cia a few days afterwards. From the shoulder the erysipelas extended over the whole ck, down the right arm to the elbow, and somewhat over the abdomen from each side; o across the front of the chest, nearly to the right shoulder. The whole duration of erysipelas in an active form was about seven or eight weeks; neither the hand nor ver extremities were affected; the areola about the vaccine points subsided, but sub-quently the surface was attacked with the disease. The suppuration about the left oulder and down the upper extremity had been very extensive; the pectoral muscle s separated from the parietes of the chest, and the skin of the forearm was so de-hed from the subjacent parts that fluids thrown in at the elbow would pass out at the k of the hand; very numerous openings have been made about the elbow and shoulder the discharge of pus. For about two months the patient was confined to his bed, convalescence was tedious. The prostration was not so great as would have been pected in such a case; the pulse not rising above ninety during the active stage of the lammation; there was, however, some delirium, with chills, headaches and pain in the k. No suppuration occurred, except in the parts above alluded to.

Case Reported by Dr. J. Bigelow.—This patient was a gentleman, about thirty years of , and having been exposed to small-pox, was re-vaccinated with several others, from same virus. Two days afterwards, an erysipelatous spot, of the size of a dollar, was covered around the point of vaccination. This spread rapidly in every direction, and the end of five days, had occupied the whole arm from the shoulder to the elbow. At

this time, several dark spots appeared upon the inside the arm, which in two days were perfectly gangrenous, so that an incision was made five inches in length, without pain. The slough was apparently confined to the skin and cellular substance, inasmuch as the muscular power was at no time lost. Meanwhile the pulse was quick, and the skin hot, with prostration, headache and delirum. In another week, the erysipelas had extended to the whole trunk, half way down the thigh, and to the wrist of the affected arm; the patient being much of the time delirious, or somnolent, and with a pulse of 120. During the third week, the symptoms were greatly aggravated, and the cerebral affection increased; there was also a retention of urine, and the catheter was required for a fortnight. During this time, however, the slough gradually separated, leaving a large, deep ulcer. The patient became convalescent at the end of a month, and slowly recovered; the ulcer requiring another month or more to cicatrize. No other person, who was vaccinated with the same virus, had any unusual symptoms; but a lady of the family, about seven weeks after the vaccination, was attacked with inflammation of the fauces and tonsils, followed by protration and delirum, and died in a week; during her sickness a livid spot, about two inches in diameter, appeared over the upper part of the sternum, but this disappeared before death.

In another case reported by Dr. Bigelow; a healthy child about five months old, was vaccinated, and the vesicle went on well until the ninth day, when the arm became erysipelatous, the inflammation rapidly spreading over the whole trunk; and the child died in a few days. On the eighth day of the vesicle, the day before the appearance of the erysipelas, matter was taken with which three others were vaccinated, and these patients had perfect vesicles without any anomalous symptoms

Case Reported by Dr. Homans.—The patient was a healthy infant, about three weeks old. On the eighth day, the vesicle appeared well, and matter was taken with which other children were vaccinated, the result being in every case successful. On the tenth day, erysipelas appeared below the elbow, and extended into the axilla; the swelling and redness very defined, and the inflammation spread rather more rapidly than is usual in the adult. Vomiting and diarrhœa came on, and lasted some days; the pulse was too quick to be counted. The head and abdomen then became affected, and on the ninth day from the invasion of the disease, the scrotum and penis were greatly swollen; these last were punctured with much relief, but a deep sloughing of the scrotum took place, one and a half inches in diameter, and nearly exposing the testicles. The extremities were next affected, but in the mean time the child began to improve, and the pulse had fallen to 120. On the subsidence of the disease, abcesses formed upon the body and limbs beneath the surface, and about the left hip, one that was quite large and deep. This last, is the only one that remains open, and the child is fairly convalescent, after a sickness of about three months.

Dr. Channing mentioned a case of erysipelas after vaccination in which the shoulder, axilla and pectoral muscles were involved. (The American Journal of Medical Sciences, October, 1850—pp. 318-321.)

Dr. Charles E. Buckingham, Physician to the Boston House of Industry, has also published an interesting case of "Constitutional Irritation following Vaccination," from which we make the following abstract:

B———, a farmer, twenty-five years of age, of previous robust health, vaccinated on Thursday, August 28, 1849.

September first, he took an emetic, and on the second a cathartic dose. Both operated freely. Dr. Buckingham was first called to him at nine P. M., September 3. At this time the patient presented the following conditions: Complete anorexia; great thirst; headache; sleeplessness; pain in back; eyes and hearing normal; urine free; pulse 150, full and strong; decubitus dorsal. His late vaccination was not known at this time. Got a saline mixture, consisting principally of bicarbonate of soda and chlorate of potassa.

Fourth.—Febrile action less; has pain in calf of right leg; no tenderness, redness, swelling or heat.

Ninth.—Pulse, 84; appetite good. No sleep last night on account of the pain in the calf, and in the sole of the right foot; has had a sinapism to the foot, with partial relief; no dejections for twenty-four hours; whole of right calf swollen; a circumscribed red spot one and a half inches below head of right fibula, covering about two inches.

Tenth.—Patient was seen, in consultation, by Dr. H. G. Clark. Redness more diffused; leg much swollen, and œdematous from knee to heel; pain confined to spot of yesterday, which is, for the first time, tender; no headache or thirst; eyes and hearing normal; neither delirum nor sighing; no appetite; tongue red at its top, and in other parts covered with a thick creamy paste; pharynx the same; pulse, 88, full.

Thirteenth, 9 A. M.—Pulse, 100, full and soft ; dejection. Attention was called to a hard, d, circumscribed swelling on the left forearm, similar to the others ; in examining which, und the remains of an irregular vaccination, of which Dr. Buckingham first learned he date as given above.

Sixteenth.—Swelling of right leg decidedly less ; that of the left leg hard, red, and excessively tender. The right elbow was red and swollen. The right eye red, swollen and ainful about the orbit ; no conjunctival redness ; tears trickling over face ; pulse 120, ll, soft, dicrotic ; respiration slow and distinct, with occasional sighing ; no delirium ; ngue perfectly steady, when protruded ; face somewhat livid ; no dejection for two ays, except from enemata.

Eighteenth.—Had a good night ; pulse 112 ; respiration 16 ; nose much swollen, dusky, d and painful ; about a dozen papules, hard, red and shot-like, scattered over forehead, ce, back and legs ; no glandular enlargement. 12 M., a few more papules on abdomen ; e others are becoming pustular, and a few are umbilicated.

Nineteenth, 8:30 A. M.—Two dejections, with urine ; tongue dry, black and cracked ; dness and swelling of whole upper face ; papules increasing in number, and pustules in ze ; a few of them umbilicated ; no glandular enlargement.

Twentieth, 10 A. M.—Pulse 120, more firm, but not so full ; respiration 32, labored, no les ; numerous black, pasty dejections ; took dose of brandy in the night ; restless, and casionally wandering ; easily aroused, and speaks sensibly, but soon falls asleep again ; stules increasing in size and number, some of them as large as good-sized peas ; knuckles right hand swollen ; both sides of face red, swollen and œdematous ; right leg of rmal size, and appears well ; left leg the same, with the exception of slight tenderss ; swelling of left forearm soft and fluctuating ; no glandular enlargement, nor mark absorbents. 9 P. M., constantly delirius ; unable to drink ; frequent involuntary dections and urine ; hands tremble, pulse 134, feeble ; respiration 36, noisy and husky ; unds and impulse of heart normal ; many of the pustules drying ; scab of vaccination me off arm ; erythema and œdema of scalp.

Twenty-first, 10 A. M.—Delirious all night ; takes nothing ; insensible ; no dejections ; lse, 134, soft, and moderately full ; respiration varies from 30 to 40, occasionally like at in hydrophobic paroxysm ; heart's impulse strong ; first sound loud, second sound arcely perceptible.

5:30 P. M.—Died. The body was removed early next day. No autopsy allowed."

As far as Dr. Buckingham could learn, there had been no sick animal on his farm, d so far as known, the patient had had no communication with any such, nor had any occasion to handle hides.—*The American Journal of the Medical Science,* July, 50, pp. 96-99.

Many of such unfortunate accidents attending vaccination, may be referred to the peculiarities of individual constitution, upon some condition f ill-health at the time of vaccination, upon the mode of life pursued during the progress of the vaccine disease, or upon some circumstance such as known to impart a severe character or a fatal tendency to other affections. Thus, it was said, that in the case of Sir Culling Eardley, who ied from the effects of vaccination, his health at the time of the operation as not in completely satisfactory condition ; and in another case recorded y Mr. Wells, where death followed re-vaccination, that, on a previous accination, an unusual idiosyncrasy was manifested by the occurrence of prostration almost bordering on death.

At certain times the development of erysipelas after vaccination may be raced to the operation of the same cause which occasions this affection fter surgical operations of any kind. Thus in October, 1859, erysipelas llowed vaccination in a few cases at Parkhurst on the Isle of Wight ; and one of these cases sloughing occurred to such an extent as to render ecessary amputation at the shoulder joints. At that time, however, there as a general cause of ill-health in operation, for both typhoid fever and rysipelas were prevailing at Newport, and several cases had occurred at he Barracks. It is well known to every surgeon, that at such times all urgical operations, even the most trifling, are dangerous.

A similar event on a large scale occurred in the French army in 1858 (*Rapport sur les Vaccination en France, pour* 1860 p. 21). On the twenty-inth of June, 1858, several men were admitted into the hospital with enorgement of the axillary glands, phlegmonous erysipelas of the arm, etc.,

as the result of a vaccination effected on the twenty-first. Sixty men were vaccinated with every precaution and unexceptionable lymph. The next day one of them was attacked with phlegmonous inflammation of the arm, complicated with typhoid fever, the origin of which was without doubt prior to the vaccination. Three days later another soldier was similarly attacked, and the fourth day seven more, but without the typhoid fever.

M. Larrey, who was sent to inquire into the affair, noted amongst its causes, first of all a very high atmospheric temperature, and, secondly, an unfavorable medical constitution. Erysipelas was prevalent in the town of Florence, where this accident happened, as well as in the hospital, and the men had, moreover, undergone an unusual amount of fatigue on account of an approaching inspection of the troops. It is evident that the mere vaccination was not in fault, since, during four years, more than 12,000 soldiers from the garrison of Paris had been re-vaccinated without any serious accident occurring.

Dr. Tymann has collected into a table a large number of instances in which erysipelas or troublesome ulcerations have followed vaccination in the practice of several British and American surgeons. (American Medical Series, v. 4, p. 134.) The greater number were in children; but then it is to be recollected that vaccination is mostly performed upon children. Of the six adults, two were between sixty and seventy years of age, one was thirty, one was twenty-five, and the seventh eighteen years old. Seven of the cases proved fatal, being attacked with erysipelas on the ninth day in three instances; on the tenth in one; on the eighth in one; on the seventh in one, and in one case the time of attack was not specified. In some of the other cases it occurred on the second, third or fourth days. The season of the year in which these cases occurred is deserving of notice. Excluding some cases of tendency to troublesome ulceration during the prevalence of a cold northeast wind in the month of May, only three of the whole twelve cases or groups of cases collected were observed during the warmer months of the year. With regard to the cases in the month of May, it is stated that the same tendency to troublesome ulceration declared itself also in persons who were at the same time inoculated for small-pox.

In one case of erysipelas followed by sloughing and necessitating amputation, related by Mr. Chartres, it is noted again that an epidemic tendency to unhealthy inflammation was observed in all cases then in the hospital, so that it became necessary to avoid every surgical operation; and even the punishment of the soldiers by flogging was suspended on account of the erysipelatous inflammation, which occurred whenever the cutaneous surface was injured.

In some cases, however, the occurrence of erysipelas may be clearly the fault of the operator, who uses lymph taken from *a pock too far advanced*, or lymph which has been present in the fluid state so long as to *permit of its decomposition*, or who may have taken it from a *subject recently blistered*.

An instance is recorded of nine persons vaccinated in the year 1800 with virus of a purulent appearance, taken from a vesicle at a very late period of its course; extensive erysipelas resulted, followed by ulceration, and in some of the instances by a tendency to gangrene. Of a large number of persons vaccinated at the same time but with different lymph, none suffered (London Medical and Physical Journal, vol. 4, p. 488).

Mr. Wakley mentions the case of two infants, aged respectively two and six months, vaccinated with good lymph (originally), preserved in a bottle for thirty or forty hours, and which at that time had undergone decomposition. In both infants the arm became greatly inflamed; one of the

ildren died with sloughing of the wound, and the other had abscesses rm in the joints and elsewhere, but recovered. (Lancet, July 10, 1852.)

Dr. Tymann also mentions an instance where fifty persons were vaccinated with a fluid produced by dissolving otherwise good scabs in water, he *phial having been carried about in the pocket of the operator.* (American Medical Times, vol. 4, p. 107.) All these persons had very severe erysipelatous and gangrenous inflammation supervene, and three of them died.

With respect to the danger of taking lymph from persons recently blistered with cantharides, Mr. Ceely states that he has known erythema and erysipelas propagated from *irritable*, late ruptured or exhausted vesicles, or from apparently healthy ones on a child who had a blister behind the ear. (Papers, etc., p. 125.)

Dr. Huder relates an instance of five children, all vaccinated from the same child, in whom very quickly the arms became swollen and oedematous, one child suffering from convulsions and two from abscesses, no vaccine vesicle being on any of them. The child from whom the lymph was taken had, the evening before, a blister applied behind the ear. Four of these children were vaccinated with clean lancets, and the fifth, being at a distance from the others, with points. (Medical Gazette, v. 13, p. 440.)

Husson relates also the case of two persons in whom sloughing ulcers resulted from the application of vaccine lymph to a surface blistered with cantharides. (Dec. des Siences Méd., tome 56, p. 423.)

Doctors Seaton and Buchanan mention three public vaccinators who made use of a moist lymph, preserved in a bottle, *after it had been kept for a week;* and one vaccinator expressed his opinion that the lymph being ammonical and putrid, was no obstacle to its success, nor to the regular course of the vaccine disease that was produced by its insertion. (Sixth Report of the Medical Officers of the Privy Council, p. 102. On Vaccination, by Edward Ballard, M. D., pp. 84-89.)

Doctor Paul F. Eve does not admit the possibility of the inoculation of erysipelas by vaccination, as will be seen from the following extract from his article on the health of the Southern Army:

"Erysipelas by Vaccination. In regard to the inoculation of erysipelas by vaccination, independant of a peculiar atmospheric influence, and irrespective of some adventitious circumstances connected with a wound, I am not prepared to admit. We are all familiar with the idiopathic variety of this affection attacking the cutaneous and mucous surfaces, at times, too, becoming epidemic, and apparently in affinity with puerperal peritonitis, and we know the traumatic type, but surely this disease does not originate from a specific virus. It is evidently infectious, but not, I believe, contagious. A distinguished surgical writer, admitting that it is inocuable, states expressly that it would be impossible for it ever to appear in a sound individual. There, then, must be a predisposition in the general system, it would seem in every instance, usually induced by malaria, before it is developed. And if this be true, namely, that the attack depends for its origin upon a peculiar state and condition of the patient's health, is it not then unwise, not to say erroneous, to suppose that erysipelas occurring after vaccination is due to a poison escorted by vaccine matter into the system? I do not, therefore, believe it inocuable by this little operation."

The view maintained by Hippocrates and his followers, that erysipelas was a disease originating from some intestine commotion of the humors, and that the offending matter was thrown off or eliminated by means of the skin, has been held by a large number of writers, with various modifications and slight additions up to the present time. The French especially advocate this view, and as a general rule deny the contagiousness of erysipelas. The English writers, on the other hand, are almost unanimous in considering the disease as capable of propagating itself by contagion under certain circumstances. Dr. Cullen admitted a species of erysipelas capable of throwing off contagious emanations. He says, "This disease is not

commonly contagious, but as it may arise from an acrid matter externally applied, so it is possible that the disease may sometimes be communicated from one person to another."

The first well-authenticated facts militating against the old notions, and proving the contagious nature of erysipelas, were published by Dr. Wells in 1798; for although Sauvages, in his "Nosologia Methodica," published thirty years before, admits an *erysipelas contagiosum*, his views are obscure and his authority doubtful, as the epidemic of Toulouse in 1715, to which he refers in support of his opinion, appears to have been scarlatina, and not erysipelas. The examples brought together by Dr. Wells, in which this complaint appeared to be unequivocally propagated by contagion, have been sustained by similar cases, described by Pitcairn, Stevenson, Gibson, Lawrence, Gregory, Elliotson, Arnott, Watson, Rogers, Goodfellew, and other English physicians.

The question of the possibility of communicating the poison of erysipelas along with the virus of the vaccine disease, is intimately associated with that of the contagiousness of erysipelas.

FACTS ILLUSTRATING THE PROPAGATION ON ERYSIPELAS BY CONTAGION.

In the brief discussion it was freely admitted that erysipelas at times prevails as an epidemic, and appears to be produced by some general epidemic influence, and that in many cases the disease may be most plausibly accounted for by sudden changes of atmospheric temperature, along with considerable moisture, together with derangement of the bowels, and the effects of particular articles of food, ardent spirits and vicious habits; and that isolated cases frequently occur in private families, and even in hospitals, in which the disease, as is often the case with typhus fever, typhoid fever, hospital gangrene, pyæmia and Asiatic cholera, spreads no farther.

The rapid propagation of erysipelas, both in the sick room and in the wards of the hospital, has been so frequently observed that no doubt can exist of this disease being under certain circumstances communicated by emanations, by fomities, or by some palpable virus. The adoption of this proposition does not at all overthrow the belief which we also hold, that the origin and spread of erysipelas in hospitals, and in private families, will depend upon the hygenic condition of the wards and rooms, and upon the state of the constitution of the patients.

It is the intention of this brief note to detail facts, rather than to enter into any hypothetical discussion.

In the summer of 1760, a person laboring under *erysipelas of the face* was brought into St. Thomas Hospital, in London, where he died. Another patient, having a different disease, was put into the same bed before it was duly purified. This patient was shortly after seized with erysipelas of the face.

Several other persons in the hospital were then attacked, among whom was an upper nurse, or sister, and she died. A rumor hence arose that the plague had got into the hospital; and so widely did this opinion spread that an advertisement was inserted into the newspapers of the day, contradicting the rumor. Dr. Ballie described it as spreading also in St. George Hospital, London, and Dr. Cullen in the hospital at Edinburgh. Dr. Wells has brought together several examples in which the complaint appeared to be unequivocally propagated by contagion.

"I visited," says Dr. Wells, on the eight of August, 1796, in Vine street, Clerkenwell, an elderly man named Skelton, who had been attacked several days before with *erysipelas of the face*. In about a week afterwards he died. On the nineteenth of the following month, I saw Mrs. Dyke, of about seventy years of age, the landlady of the house in which Skelton had been a lodger, and found her laboring under an erysipelas of her face. I inquired whether any other person in her house had been ill of the same disease since the death of Skelton, and was told that his wife had been seized with it a few days after his decease, and had died with it in about a week. During my attendance upon Mrs. Dyke, an old woman, her nurse, was attacked with the same disorder, and was sent to the parish workhouse, where *she* died. Mrs. Dyke has since informed me that a young man, the nephew of Skelton, was taken with the disease of which his uncle died, shortly after visiting him, and survived the attack only a few days. That she herself had been several times with Skelton, and his wife during their sickness, and after death had removed some furniture from the room they occupied to her own apartment."—Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge.

Dr. Wells relates other histories of the same kind, which in like manner occurred when there was no epidemic of erysipelas prevailing.

Dr. Pitcairn attended, in February, 1797, a lady with child-bed fever, who had erysipatous inflammation in her skin. Her new-born babe had erysipelas of the pudendum, and both mother and child died after a few days' illness. Eight days after the death of the child, the lady's mother and a servant maid, both of whom had attended the child in its illness, were attacked with *erysipelas facici*, from which both recovered.

Dr. Stevenson details briefly the results of twenty-one caess of erysipelas which occurred in his practice in 1821-2:

"It spread, in many instances, through the members of the same family; in some it appeared soon after visiting friends, or relatives, during the period of the disease. A person who was attacked while in attendance on an erysipelatous patient, went home to her parents, who resided at some distance, as soon as she was taken ill; they were soon successively seized, and the mother died in a few days." (Transactions of the Medico Chirurgical Society of Edinburgh, v. 2.)

Dr. Gibson has recorded similar cases which came under his observation in 1822. (Transactions Medical Chirurgical Society of Edinburgh, v. 3.)

"A young man with erysipelas of the face, was brought to his father's house at the distance of some miles. He ultimately recovered. His master had died a few days before of a febrile disease. The father of this young man was attacked with erysipelas in both hads and arms, which spread to the face. He died in a few days. The infant son of a gentleman was seized with erysipelas on one foot. The mother was afterwards with erysipelas of the scalp. The nurse, who suckled the child, was seized with symptoms of pneumonia, and was removed to her father's house, four miles off. Her father, who had some days before her arrival, received a wound of the scalp, was seized with erysipelas of the face and scalp, and died soon afterwards. A sister, living in the same cottage, had fever with sore throat, from which she slowly recovered. Two children in the same house were cut off with what appeared to be the croup. The disease of the sister and children was supposed to be erysipelatous inflammation of the fauces and trachea.

A woman was admitted into the infirmary of Montrose, with suppuration of the hand, which had followed an attack of erysipelas. Some days after her admission, the patients in the two beds next to her were seized with erysipelas. It was afterwards found that, notwithstanding all the patients were removed from that ward, and the process of cleaning, whitewashing and fumigating adopted, the disease again reappeared when fresh patients were placed in this ward, so that it became at length necessary to shut up the infirmary for a time.—Cyclopædia of Practical Medicine, Art. Erysipelas.

Mr. Lawrence also mentions similar cases. (Medico Chirurgical Transactions of London, vol. 14.)

Dr. George Gregory in his valuable lectures on the Eruptive Fevers, has expressed his belief in the contagious nature of erysipelas in no unequivocal terms, and his views are worthy of careful consideration in this connection.

"A connection of more than twenty years with the small-pox hospital, has given me abundant opportunities, not only of confirming the truth of these propositions, but of showing that we may carry our views much further. I feel persuaded, *first* that erysipelas may commence in an hospital without the suspicion of importation. 2. That being so generated, from bed to bed, it may spread by contagion. 3. That the miasm generating erysipelas is identical with that which in lying in hospitals generates puerperal peritonitis, which in foundling hospitals and workhouse nurseries gives rise to pudendal gangrene and umbilical ulceration—which in army hospitals generates hospital gangrene—which in hospitals differently circumstanced is found on occasion a malignant form of cynanche, both mucus and cellular, with otitis, glossitis, an asthenic form of laryngitis, the most aggravated type of typhus gravior.

"The origin of scurvy in crowded and ill-regulated ships is obviously a branch of the same general doctrine. A destructive miasm is there generated which is far more injurious to the human frame than the use of salt provisions. Whatever be the exact nature (or essence) of the miasm which thus generates erysipelas, peritonitis, gangrenous ulceration or scorbutic blotches, it is something depressing to the vital power.

"The dependence of erysipelas on a miasm *sui generis* is no new doctrine. It has been stated over and over again by individnal writers, but it has never, I think, been urged by systematic authors with the importance which it merits; nor has the doctrine been received as one of the avowed axioms of pathology. Dr. Rollo, in a treatise entitled, 'A Short Account of a Morbid Poison Acting on Sores,' and published very early in this century, distinctly announces the principle, and illustrates the intimate connection between erysipelas and hospital gangrene.

The circumstances which lead to the development of ochletic miasm have never been investigated with the accuracy which is desirable, and of which the subject is certainly susceptible. The first in importance is undoubtedly overcrowding the wards of an hospital. When the French academicians (I think it was early in the French Revolution) were laboring diligently to reform the abuses in the Hotel Dieu, some of them were at the pains to calculate in how many hours, supposing the ward to have been hermetically sealed, all the patients in it must necessarily have died, presuming that each adult requires for its support a gallon of air per minute. The time was wonderfully short.

But it is not numbers alone which are to be considered. A ward might safely hold fifty cases of simple fracture, which would not with safety contain twenty cases of compound fracture. Something, therefore, depends on the nature of the disorder. All disorders which throw out diseased secretions are more apt to taint and vitiate the air than those where no secreting process goes forward. It is on this account that the wards of the Small-pox Hospital are so peculiarly liable to generate ochletic miasm.

Another element of great importance in determining the sources of ochletic miasm is the degree of attention bestowed on cleanliness. If the bed linen, mattresses, palliasses, sheets, and blankets, be frequently changed, the floors well cleaned, and the walls frequently whitewashed; if the nurses be careful to carry away all foul secretions, and to purify the patient's body by an abundance of soap and water; in short, if the internal regulations of the hospital be good, miasm would, I suppose, be rarely engendered, even though the ward be crowded.

A fourth element must enter into the calculation, and that is a good supply of fresh air. This by some is considered all in all; but it is not so, and all the ventilation in the world, conducted on the most scientific principles, and superintended by Dr. Reid himself, would fail in preventing ochletic miasm, if either beds or bolsters, soaked in unhealthy discharges, are permitted to remain in the ward.

Dr. Rollo has advanced a step further in the analysis of ochletic miasm, and maintains that the disposition to erysipelas and its correlative diseases (puerperal peritonitis, and hospital gangrene) depends chiefly on a peculiar, but hitherto undetected condition of the atmosphere. He is led to this opinion by observing that erysipelas sometimes shows itself in the airiest, least crowded, and best regulated hospitals. Without stopping to inquire how much is due this circumstance, we are fully warranted in saying that the

state of the atmosphere must not be lost sight of in such an investigation. We known on the authority of Dr. Lind, that in Batavia and other localities notorious for malaria, hospital gangrene and erysipelas, and every sort of associated disorder, prevail with intensity at certain seasons.

Assuming it as proved, that erysipelas is liable, from one or more of the five causes now detailed (viz: accumulation of persons, character of the discharges, want of cleanliness, want of ventilation, constitution of the atmosphere), to spread epidemically, it is still to be shown that this disease throws off contagious emanations, which can, *per se*, independent of any such influences, propagate the like complaint.

"Dr. Wells has met this question fairly by detailing a variety of cases where erysipelas spread by contagion in *private houses*, and under circumsrances calculated to exclude all agency save that of simple contagion."

Dr. Gregory supports his views by a reference to the cases of Dra. Wells, Pitcairn and others, and also by his own individual experience.

Dr. Elliotson, in his "Principles and Practice of Medicine," gives the following account of the mode in which he contracted the disease in his own person:

"I recollect once having had it, five days after stooping down over a patient, who had the disease in so violent a form that he died of it. I was looking into the state of his skin, and his breath came into my face. I turned away with a feeling of disgust, and said, 'I hope I have not caught it,' but, five days afterwards, having forgotten the circumstance, I was seized with erysipelas. I felt chilly, and my head was sore; and I had the disease violently."

Professor Arnott also has given striking examples of the propagation of erysipelas from one person to another, not only under the same roof, and in the same locality, but also when the parties lived at a distance from each other, and the intercourse had been but for short periods of time.

Dr. Thomas Watson, who advocated the view that erysipelas is contagious gives the following incident in his "Lectures on the Principles and Practice of Physic," which had been told him upon good authority:

"A man living somewhere in Westminster fell ill of idopathic erysipelas. In that state for some reason or other, he was removed thence; and his brother, who was a servant in or near Portland Place, received him clandestinely into his master's house, and allowed him (for two nights I believe) to share his bed. That brother was soon attacked with erysipelas; and in the course of his illness was visited by his master. The master was also attacked; and it is worthy of remark, that in both master and servant, the disease showed itself just seven days after they had respectively come near another who was affected with it."

Dr. Rogers has related a case, which closely resembles that of Dr. Elliotson:

"A medical student went into the country, and was requested by his brother, a medical man, to visit an erysipelas patient. While leaning over her he became conscious of a nauseous odor, which almost caused him to be sick. A few days after, he was suddenly seized with shivering, followed by fever; erysipelas shortly came on in the head and face, and he died after a week's illness."

In the following instance, communicated to Dr. Campbell De Morgan, Surgeon of the Middlesex Hospital, by Dr. Goodfellow, it is evident that the disease spread from bed to bed:

"In the epidemic of typhus that prevailed in the autumn of 1838, more or less of erysipelas was constantly to be found in the wards; and, as a general rule, it spread from bed to bed. On one occasion, however, this was more than usually striking. It occurred in the large fever ward, containing thirteen beds, and well ventilated. Erysipelas attacked a patient on that side on which were seven beds. She was in the bed next but one to the end; the patient lying in the next bed, the third from the end, was next attacked, and then the patient at the end. The disease successively attacked all the patients in the order in which the beds were placed, until it reached the lower end of the ward. It then attacked the patient lying at the same end of the ward, but on the opposite side, and spread from bed to bed until it reached the last on this side, the patient lying in which was the only one who escaped."—A System of Surgery by Various Authors, Edited by Holmes, pp. 247-8.

Dr. Steele, in his Annual Report on Guy's Hospital for 1863, writes, that for some years past it has been customary to place patients suffering from erysipelatous wounds in these (the medical) wards, in order to diminish as much as possible the risk of extending infection in surgical wards, as well as to promote recovery in the patients themselves. It happened, however, that in one of the wards of the new hospital into which a patient suffering from erysipelas was placed, in the course of the past year *five* persons suffering from other complaints were attacked with the disease; and although none of the cases were attended with fatal consequences, the occurrence is sufficient to point out the danger which mush be occasionally apprehended."

Erysipelas has appeared extensively, and for long periods, in the Birmingham, Edinburg, Glasgow, and London hospitals and it has been frequently necessary to empty and whitewash the wards and thus rid them of the disease.

Many of the surgeons of the English navy believe in the contagiousness of erysipelas; and it has been debated, whether scrubbing the decks, or dry rubbing them is the best mode of cleasing a ship and preventing the spread ot the disease.

The old Dreadnought, hospital of the Thames is said to have been so impregnated with the contagious matter of erysipelas that she had ultimately to be taken up, and a new vessel substituted.

There was a diversity of opinion amongst the Confederate surgeons with regard to the contagiousness of erysipelas. This diversity of opinion was clearly referable in some cases to dogmas embraced during education, and

to a want of careful and extended observation, and investigation of the origin, and mode of propagation, of the diseases incident to camp life. The reliability and value of the testimony of men upon such questions, clearly depends, not merely upon the extent of the field of observation, but also upon the mode in which, and the intelligence with which, the phenomena are investigated.

Many cases occurred during the progress of the war, in which erysipelas was clearly referable in its origin and spread to the crowding together of large numbers of sick and wounded, in ill ventilated hospitals.

The following communication from Dr. J. C. Nott, of Mobile, Alabama, illustrates, not only the dependence of erysipelas upon crowding, but also shows that in such cases, in like manner with hospital gangrene, the disease is best eradicated by scattering the patients and giving them free ventilation. It would be surely unwise and unphilosophic to refer the origin of erysipelas in such cases to an atmospherical influence, for the disease was most prevalent and most fatal in the most crowded hospitals, and was most speedily and effectually destroyed by breaking up those sources of contagion.

No light whatever is thrown upon the subject by declaring the disease *infectious* and not contagious in crowded hospitals. We can only refer the propagation of infectious diseases to the exhalations from the sick, or from the excretions of their bodies, which act upon the extended surface of the lungs and skin of those immersed in the infected atmosphere; and we know that in the case of the two most *contagious* and *infectious* diseases—small-pox and measles—the diseased actions may be propagated in both ways by the inhalation of the exhalations of the sick, as well as by direct contact with the morbific matters.

MOBILE, November 21, 1866.

Professor Joseph Jones, M. D. :

Dear Sir—Your letter came to hand yesterday, together with two numbers of your journal. I am sorry that I have no notes or statistics relating to hospital gangrene.

My connection with the army was in the command of General Bragg, commencing about six weeks before the battle of Shiloh. I had, it is true, been the Medical Director in Mobile for some time previously, but we had no wounds to deal with. Very soon after we got to Corinth all sorts of camp diseases prevailed among the troops—diarrhœa, typhoid fever, etc., and erysipelas. The colonel of a regiment came to me and begged me to visit a small brick church in the vicinity of Corinth, in which his men were dying at a fearful rate with erysipelas. On visiting the church, I found some seventy or eighty sick or wounded men crowded together in a small church, and about one-half of them with erysipelas. There had been daily skirmishing going on, and about one-fourth of the men had been wounded. The disease attacked those wounded, as well as others, indiscriminately. Many of them were dying with erysipelas of face and scalp, who had not been wounded, and I never saw a more revolting scene than this hospital presented. I ordered it to be evacuated at once, and the patients to be removed to tents, at some distance off in the open field. The effect was immediate and salutary. The erysipelas ceased to attack others, and the health of the command improved rapidly.

At the same time above alluded to, we had some cases of hospital gangrene among the wounded in different hospitals, up to the time of the battle of Shiloh. Being occupied very busily in office as Director of the Post, I had no time for visiting hospitals, and the battle of Shiloh coming off soon, and there being very little hospital accommodation, we were compelled to send off in every direction 10,000 wounded and as many sick. So I saw very little of what occurred among our wounded.

I afterwards went into Kentucky; was at the battle of Perryville, and other smaller battles; but here we had to leave our wounded behind, after every battle.

So really my experience has not been extensive or satisfactory in hospital gangrene. I have seen a good many scattering cases during the war, and have found them best treated by the application of nitric acid, iron, tonics, stimulants and good diet.

On the whole, then, my observations and information are too indefinite to be worth much, and I write more to state the simple fact that we did have cases of hospital gangrene before and after the battle of Shiloh, and I looked upon it as close akin to erysipelas. Very respectfully, yours, etc.,

J. C. NOTT.

It will be seen from the following statistical information and sanitary report of the Moore Hospital, Manassas Junction, Virginia, for the month of January, 1862, that in this hospital, which received the worst cases of typhoid fever and pneumonia, and was liable to sudden and unavoidable crowding of the sick, erysipelas attacked almost universally the patients operated on, only two escaping.

"MOORE HOSPITAL," MANASSAS JUNCTION, VA,, February 7, 1862.

Thos. Williams, Surgeon, C. S. A., Medical Director Army of Potomac:

Sir—I have the honor to forward the report of the "Sick and Wounded" of the Moore Hospital, for the month of January. The face of it shows only 235 patients admitted, while 77 of these have died—a fearful mortality, I confess—and did it extend to all diseases would soon decimate our army. But when it is recollected that the 235 men kept here were picked out of over 2900 that have passed through and were sent further back, and that those kept are the sickest—in fact a number came in moribund, others dying from six to twenty-four hours after their arrival—the mortality does not appear so appalling. At the beginning of January there were remaining 114 sick and convalescents; of these 25 died during the past month, making the mortality 102. The report shows 37 cases of febris typhoides, with 17 deaths, which is, strictly speaking, not true, as there have been but four or five cases of well-developed typhoid fever in the wards, and those so diagnosed are, in the majority of cases, simple continued fever, taking on a typhoid form, but wanting in all the particulars of typhoid fever proper; and, I feel confident, was there an opportunity afforded for post-mortem examinations, they would be found wanting in the pathological changes peculiar to the disease.

There were 128 cases of pneumonia treated, with a loss of 45, almost 36 per cent, though not large when the condition of the patients at the time of entering the hospital is taken into consideration; a large majority of the cases are sick from three to ten days in camp before they are brought to the hospital. Such cases presenting bad symptoms, but still not necessarily of a fatal character, after a ride in an ambulance or wagon of three or five miles over a rough road, are placed beyond redemption. Stimulants and carb. ammonia may revive the vital spark, and the man live for several days, and occasionally, I am happy to say, has elasticity enough about his constitution to get well. As an evidence of the fatality caused by surrounding disadvantages, I have simply to refer to some ten or twelve cases of pneumonia in my nurses where every case has recovered, each one of them showing the good effects of antimony in the early stage of the disease.

Those sent from this place to general hospital, have been convalescents sent further back to make room for the sick. They have been South Carolinians and Mississippians, and were sent to Charlottsville and Warrenton.

The number of furloughs (47) is large for the number of patients; but when it is considered that all of the wounded—at least 60—from the battle of Drainesville, were here, that will be accounted for.

I may add, that the two cases of erysipelas were purely idiopathic, and in the ward where all the worst wounded were, there was quite a number of other cases there, arising from any little operations performed, such as removing a bullet or spicula of bone, but two patients operated on escaping. On one of those I ligated the carotid artery; in the other, amputation of the thigh was performed. The latter operation was performed three weeks since, and the same day a bullet was extracted from the shoulder, which immediately took on erysipelatous inflammation, whilst there has never been the slighest symptoms of it about the amputation. In several of these cases, and especially the idiopathic, the inflammation was not confined to the skin, but extended to the subcutaneous areolar tissue, forming what Dr. Stone, of New Orleans, says is different from erysipelas, and what he calls "subcutaneous areolar inflammation," never running its course without suppuration, and occasionally to an enormous extent, invariably presenting typhoid (low) symptoms. I am, sir, your obedient servant,

J. F. BELL, P. A. C. S., Surgeon in Charge.

These examples might be multiplied, but these are believed to be sufficient to illustrate the experience of many Confederate surgeons upon the intimate relations of erysipelas, in its origin and spread to such diseases as hospital gangrene, which were known to be contagious.

On the other hand the armies were never so healthy, and the wounded were never so free from erysipelas as during the most active campaigns.

The army of Gen. T. J. Jackson (Stonewall) during its active campaign in the Valley of Virginia was remarkably healthy, and the wounded, as I

ascertained by a personal inspection and examination of the records of several of the largest hospitals connected with the department commanded by this distinguished soldier, were exempt to a great degree from both erysipelas and hospital gangrene. This immunity was due to several causes, but chiefly to the active habits and good morale of his soldiers, to the comparatively abundant supplies of this rich country, and to the large and commodious hospitals established at Staunton and other eligible points in this elevated and healthy region. The truth of this assertion will be sustained in the following sanitary report of his Medical Director, Surgeon Hunter McGuire:

NEW MARKET, Virginia, April 15, 1862.

S. P. Moore, Surgeon General, C. S. A.:

Sir—I have the honor to forward the consolidated report of sick and wounded, and the return of the medical officers serving in the Army of the Valley of Virginia for the month of March, 1862, (Major General Jackson's Command).

Though subjected to long and sometimes forced marches, the health of this army was better during the month of March than during any other since its organization. It is a fact well known to regimental surgeons and commanders, that the numbers reported sick during marches, even when they are long and fatiguing, provided the weather is clear and dry, is less than that which occurs when troops are stationary and subjected to the ordinary duties of camp.

Towards the end of the month recruits and drafted men were added to the regiments, and the amount of sickness increased; indeed, the large proportion of those reported sick belong to the men recently attached to the regiments, who are not yet inured to the hardships of a soldier's life. I enclose also a list of the killed and wounded of this army, in the engagement near Winchester, March 23, 1863. It numbers sixty-one killed and three hundred and sixty-one wounded. Some of the latter were mortally wounded, and have since died, which increases the number of dead, as far as known, to eighty-eight, and proportionately reduces the number of wounded. One hundred and fifty-seven of the wounded were removed from the field, the rest fell into the hands of the enemy. It is gratifying to know that our dead were decently buried by the citizens of Winchester, and that our wounded have received every attention from the physicians and ladies of that place. Very respectfully, your obedient servant,

HUNTER McGUIRE, Medical Director Army Valley of Virginia.

While we do not at all deny, that erysipelas at times prevails as an epidemic, and appears to be produced by some general epidemic influence, and that in many cases the disease may be most plausibly accounted for, by sudden changes of atmospheric temperature, along with considerable moisture, together with derangement of the bowels, and the effects of particular articles of food; at the same time there are facts to show that this disease is at times, if not always, contagious.

Neither would we be understood as insinuating, that instances of its transmission by contagion, are common in private practice, for isolated cases frequently occur in private families in which no member of the family and no nurse contracts the disease.

The origin and spread of erysipelas in hospitals, will depend upon the hygienic condition of the wards, and upon the state of the constitution of the patients.

Many of the Confederate surgeons appeared to be aware of the dangers attending the indiscriminate use of sponges, dressings, and uncleansed wash bowls, when erysipelas was present in their wards. When wounds were cleansed with sponges or rags which had been used on erysipelatous, patients, it was frequently observed that the disease appeared; and such propagation appeared to be clearly referable to the transference of the contagious matter.

It can be shown therefore that the evidence of contagion in erysipelas rests upon nearly the same grounds as in the well known contagious diseases, scarlet fever, measles, and typhus fever.

Many of the British physicians and surgeons entertain but little doubt of the connection, if not the identity of erysipelas with puerperal fever. Without entering into an extended examination of the facts upon which this view rests, it will be sufficient to recall the well known fact, that inoculation with the fluid of a female who had died of puerperal fever, is a most fatal source of diffuse cellular inflammation to the dissector.

Dr. George Gregory, in his Lectures on the Eruptive Fevers, says that he had heard of a case where vaccine matter taken from the arm of a child laboring under erysipelas, had communicated both diseases.

And finally, Dr. Willan has testified that if a person be inoculated with the fluid contained in the phlyctinae or vesicles of a genuine erysipelas, a red, painful, diffused swelling and inflammation analogous to erysipelas is produced.

This experiment has not, as far as we are aware, been repeated; and, with such a direct demonstration of the possibility of communicating erysipelas by inoculation, we are at a loss to know upon what principles of reasoning, authors, who have never performed a single experiment themselves, assume the right of setting aside the assertion of Dr. Willan.

By these facts, therefore, as well as by those which occurred during the recent war amongst the soldiers and citizens of the Confederate States, we are justified in drawing the conclusion that it is possible to communicate the poison of erysipelas through the medium of the vaccine matter

The practical conclusion which we draw from this discussion, is that:

As far as possible soldiers, especially during long and fatiguing campaigns, and when crowded in hospitals and barracks, should be vaccinated with the lymph or vaccine virus from young healthy children. It is best, both in civil and in military practice, not to use the vaccine virus from the arms of soldiers, because their mode of life is an artificial one, to a great extent; a stereotyped life of restraint and hardship, and of great sameness of diet, and consequently a life liable to great excesses and irregularities of habits, and to great and sudden variations of health, as well as to slow and imperceptible deterioration of nutritive fluids.

The quality of the vaccine virus will depend, in great measure, upon the manner in which the nutrition of the body is performed. We use the word nutrition in its largest sense. Vaccine matter obtained from the arms of the feeble and often scorbutic convalescents of crowded civil and military hospitals, is wholly unfit for the propagation of the vaccine disease. Of all places, *civil and military hospitals* are the *very last*, to which the profession should look for supplies of vaccine matter; and yet, during the recent war, it was in the crowded hospitals that vaccination was most dilligently, perpetually and indiscriminately performed. In these most destructive centres of contagious diseases of typhoid-fever, erysipelas, hospital gangrene, and pyaemia, the so-called vaccine matter passed from soldier to soldier in an endless round. Is there any marvel that under *such a system, enforced by military law*, the matter should have progressively deteriorated, and the accidents of vaccination (spurious vaccination) have become both common and serious?

SECTION VII.—FRESH AND DRIED VACCINE LYMPH AND SCABS FROM PATIENTS SUFFERING WITH SECONDARY OR CONSTITUTIONAL SYPHILIS AT THE TIME AND DURING THE PROGRESS OF VACCINATION AND THE VACCINE DISEASE — PROFESSOR EVE, DOCTORS KRATZ, FUQUA, RAMSEY, CRAWFORD, PERCIVAL, STOUT, WOODWARD, HUBBARD, BOLTON AND OTHERS ON THE RELATIONS OF SYPHILIS TO SPURIOUS VACCINATION—DISCUSSION OF THE RELATIONS OF SECONDARY OR CONSTITUTIONAL SYPHILIS TO VACCINATION—THE POSSIBILITY OF COMMUNICATING TUBERCULOSIS AND CANCER BY INOCULATION—THE POSSIBILITY OF COMMUNICATING SECONDARY OR CONSTITUTIONAL SYPHILIS BY INOCULATION—TESTIMONY OF TORELLO, 1498; WILLIAM CLOWES, 1637; GIDEON HARVEY, 1665; DANIEL TURNER, 1717; JOHN HUNTER, 1776; AND OF DOCTORS DUNCAN, WATSON, HAMERTON, EGAN, PRICE, RIZZI, WALLER AND OTHERS, ON THE CONTAGIOUSNESS OF SECONDARY SYPHILIS.

THE POSSIBILITY OF COMMUNICATING CONSTITUTIONAL SYPHILIS THROUGH THE MEDIUM OF VACCINE VIRUS—TESTIMONY OF M. VIENNOIS, DRS. PACCHIOTTI, MARONE, POGUE, DEPAUL AND OTHERS—SMALL-POX EPIDEMIC IN MOBILE DURING WINTER OF 1865-6—SYPHILITIC VACCINE AND THE MEANS OF PREVENTING IT—INOCULABILITY OF TUBERCLE—MORTALITY OCCASIONED IN NEW ORLEANS AND THE MISSISSIPPI VALLEY—POSSIBILITY OF TRANSMITTING SCROFULA BY VACCINATION—INOCULABILITY OF CANCER—CONTAGIOUS NATURE OF CONSTITUTIONAL SYPHILIS—COMMUNICATION OF SYPHILIS BY VACCINATION—MODIFIED OR LACTO-VARIOLOUS INOCULATION—VARIOLATION OF THE COW—ANIMAL VACCINATION.

We examined at different times, during the progress of the recent war, nd also had under treatment, various skin affections, which presented the haracters of the cutaneous diseases, characteristic of secondary syphilis, hich were directly traceable to impure vaccine virus. I saw several cases which enlarged buboes in the axilla and groin accompanied the peculiar kin affection induced by impure vaccine matter. No such results followed accination as performed by myself or immediately under my direction duing the war; these accidents were avoided in my civil and military practice, by adhering rigidly to the rule of using lymph from the arms of healthy hildren and infants; the opportunity therefore did not present itself of oberving and carefully noting the disease in its first stages. The cases reembling constitutional syphilis and which were said to have resulted dictly from vaccination, which came under my observation and treatment, ere as a general rule of long standing, and had been collected from differt hospitals, and from various regiments, serving in widely separated istricts.

In the summer of 1863, I examined a large number, and if my memory is correct, over two hundred cases of severe skin affections and general constitutional derangement resulting from vaccination, in the large hospitals in and around Richmond, Virginia. In these cases, as well as in those examined in other parts of Virginia, South Carolina, and Georgia, great difficulty was experienced in tracing the impure matter to a definite source, that is to the point at which it became contaminated or deteriorated. I do not wish to be understood as asserting or insinuating that this large number of cases presented the symptoms of secondary syphilis; so far from this it appeared to me that those cases which presented the most complete resemblance with constitutional syphilis were not as numerous as those which were clearly referable to scorbutic and other deranged conditions of the system induced by fatigue, exposure and bad diet.

During the progress of the war, the subject of the relation of vaccination to constitutional syphilis, engaged my most anxious thought and I had determined to make it a special snbjcct of investigation in the field and general hospitals, immediately upon the completion of my investigations upon typhoid fever, malarial fever, small-pox, hospital gangrene, and pyæmia, believing that a correct solution of this difficult and important question was to be obtained only by a personal examination of the cases as they arose in the regiments serving in the field, and a careful collection and examination of the testimony of the regimental surgeons and assistant surgeons. From experience gained in other investigations in the field and general hospitals, I was well aware that such labors required much time and were beset with many difficulties. From the terrible drain upon the Confederate States for men, the hospitals and convalescent camps were subjected to the most rigid scrutiny, and all men not absolutely disabled from every kind of duty, were at the earliest possible moment transferred to clerical and light duty in the quartermaster, commissary, medical and purveying departments.

From the great disparity of numbers, and from the immense extent of country in which the operations were conducted, the Confederate troops were in perpetual motion. The same soldiers, in the course of a few months, conducted fatiguing campaigns which extended over entire States, and fought bloody and desperate battles with superior forces in localities separated by hundreds of miles. Whole armies that had been victorious at some remote portion of the border, or of the Atlantic and Gulf coasts, were suddenly transported by railroad, across the entire Confederacy, to take their immediate part, without rest, in the bloody battles of the mountains of Tennessee and in the valleys of Virginia. These difficulties were experienced to a greater or less degree by every medical officer who undertook the investigation of this subject; and it has been rendered still more obscure by the sudden manner in which the struggle terminated, and by the loss of the most extensive and valuable reports on file in the Surgeon General's office at Richmond.

I have sought to remedy, in a small degree, these defects, by addressing inquiries to a large number of those who formerly occupied positions in the medical service favorable for the investigation of the causes of the accidents following vaccination. It must be confessed that, up to the present time, the replies received to these inquiries have been wanting in that full and accurate detail of individual cases, which is so necessary to the proper solution of the question, whether the lymph or scab of a vaccine vesicle its peculiar virus, contain another infections principle, as that of syphilis.

The affirmative of this question was held by many, both in civil and military practice; and a number of the Confederate surgeons boldly took

the ground that secondary syphilis could be communicated along with the vaccine virus, and especially when the dried scabs were employed. In the records upon this subject, which we examined in the Surgeon General's office in the Confederate Capital, this view was clearly announced. Several of these reports had been prepared in accordance with a direct order issued by the Surgeon General, directing a careful investigation into the origin and causes of spurious vaccination. The history and results of a portion of the investigations ordered by Dr. Moore are given in the following extracts from an official letter:

Professor Joseph Jones, M. D.:

During the month of March, 1863, Medical Director Guild was so impressed with the importance of this affection that he ordered a committee of investigation into the extent of its prevalence, its causes and nature. The committee limited their inspection to those regiments only whose medical officers had reported the presence of this "spurious vaccination." The committee consisted of Surgeons R. G. Breckinridge, now of Houston, Texas; Herndon, of Fredericksburg, Virginia, and ———, of North Carolina. The cases of spurious vaccination was most numerous in the Twelfth and Sixteenth Georgia Regiments. In one of those regiments we found over one hundred cases of ulcerated arms and hands, and in many instances extending to the body and lower extremities. In one of these regiments the historical connection with syphilis was most conclusive. They had all been vaccinated from the arm of a comrade of very dissolute habits, who had just returned from a leave of absence. This soldier was at this time in camp, and presented unmistakable evidences of syphilis. I do not think I err when I state that there was no chancre on the penis, but we rested our opinion of the existence of syphilis upon the characteristic sore throat and eruption, and his confessions as to the recent existence of chancre. He had just returned from some little village in Georgia, and informed us that a physician practicing there had taken matter from his arm and inserted it into the arms of a large number of young persons in his neighborhood. The "vaccination" in all these cases was done by the soldiers themselves, and not by their medical officers; consequently, acting upon the popular idea that the larger the sore the more complete is the pretection, they selected the worst sores for the propagation of the virus. The committee agreed, with regard to the worst of these ulcers, that their appearance and progress were so analogous to syphilides that they did not hesitate to class them as such. The usual treatment for syphilis did not *cure or benefit these cases with any marked uniformity.* We find a ready explanation of this observation in the condition of constitution and circumstances under which the treatment was instituted—poor diet, scurvy, and camp life. * * *

The testimony of Dr. J. F. Gilmore is decided as to the syphilitic origin of a portion at least of the cases of *spurious* vaccination in the Confederate Army of Northern Virginia, as will be seen from the following communication, kindly placed in my hands by the late Professor Paul F. Eve, M. D.:

[Copy.] MOBILE, ALA., May 27, 1867.

Prof. Paul F. Eve, Nashville, Tenn.:

Dear Doctor—I promised Dr. Nott, before he left us for Baltimore, to write Professor Jones, relative to spurious vaccination, of which I saw a great deal in the army in Virginia, and as I am in your debt a letter, I trust you will pardon me for doing so through yourself.

The small-pox broke out in the army in Virginia, shortly after the battle of Sharpsburg, whilst we were in camp, in the valley, in the vicinity of Winchester, reorganizing and watching the movements of McLellan. The first case occurred in the brigade of Gen. G. T. Anderson, of Georgia.

At that time, I was the Chief Surgeon of McLaw's Division. The disease did not show itself in my command until the latter days of October. The first case occurred in a private of the Thirteenth Mississippi Regiment, who contracted it while hauling supplies from Staunton for the army. It, however, did not make much headway until after the battle of Fredericksburg, the thirteenth and fourteenth of December, I believe.

The act of Congress reorganizing the army after the expiration of the twelve months' volunteers, provided that each man who re-enlisted, should receive, in addition to the bounty, a furlough for thirty days, and Gen. Lee, in order to carry out the provisions of this act, without materially weakening the army, issued a general order granting furloughs to two (2) men to every hundred on duty. This order, I think, was issued whilst we were in the valley. Shortly after the battle of Fredericksburg, a private in Semmes' Georgia Brigade returned to his command, who had received a furlough under the order. He came back to his regiment, with what he supposed was an ample supply of virus for all of his friends, a large number of whom he vaccinated, not only in his own brigade, but also in Cobb's. In this way the impure virus obtained a stronghold in these two brigades.

McLaw's Division was composed of four brigades: Kershaw's, South Carolina; Barksdale's, Mississippi; Semmes' and Cobb's, Georgia brigades. I don't recollect that I saw a single case in either Kershaw's or Barksdale's commands, but in the other two commands we had about three hundred cases.

By the direction of Surgeon and Medical Director L. Guild, I had two hospitals established, one for Semmes' and the other Cobb's brigades; Semmes' under the charge of Sur-

geon Todd, and Cobb's under the charge of Surgeon Eldridge. For some cause which I don't recollect, Dr. Guild thought it better that these cases should not be sent to general hospital; and it being impossible to obtain suitable buildings, tents were used.

The cases presented the appearances that are familiar to those of us who were connected with the Confederate army—large rupia-looking sores, sometimes only one, generally several on the arm in which the virus was inserted. In a number of cases, these sores extended, or rather appeared, on the forearm; and in two cases that I saw, they appeared on the lower extremities. These men suffered severely from nocturnal rheumatism. Several cases had, to all appearances, syphilitic roseola.

I saw enough of the trouble to convince me thoroughly that the virus owed its impurity to a syphilitic contamination.

The cases all improved under the administration of the iodide of potassium and vegetable diet. In some of the cases, Grau's combination of the iodide of potassium and corrosive sublimate was employed.

In many of them there was a marked scorbutic tendency, which may in part account for the bad effects of the virus; but there were in the great majority of the cases unmistakable evidences of syphilis.

When the hospitals were broken up, just a few days before the battle of Chancellorsville, there remained under treatment about twenty cases, that were sent to general hospital at Richmond.

To Surgeon Todd, we are indebted for the following facts, that were embodied in a report made by myself to Surgeon Robert J. Breckinridge, Medical Inspector of the army.

To the man above alluded to, who returned to his command shortly after the battle of Fredericksburg, was traced the origin of the vaccine virus that had wrought so much mischief in the two Georgia brigades. He stated that on his way back to the army, that he was detained in Augusta, Ga., and whilst there visited a house of ill-fame, and was vaccinated by one of the female inmates. This man denied ever having had syphilis previous to his vaccination. The rupia looking sore on his arm, and roseolous eruption of the skin of a coppery hue, added to the fact that others vaccinated from the sore presented many of the characteristic features of constitutional syphilis, are to my mind unmistakable evidences that syphilis may be communicated, I will not say by vaccine lymph, but certainly by vaccination; possibly by getting a small quantity of blood on the point of the lancet in performing the operation.

I am unable to say whether the woman by whom this man was vaccinated had syphilis or not.

In thinking of this subject, the thought suggests itself to my mind, that if the blood can convey a poison, that the vaccine lymph would be equally as capable; for if there is anything in our theories about cells, and especially if the cells have an individual existance, certainly it is fair to presume, that any cell that has its existance from a person suffering from a constitutional disease, might have imparted to it the disease of the parent. In no other way can we account for the transmission of disease from father to child; and then again the query arises, if the blood can be poisoned by a disease of the cells, why may not, the other fluids be also? But this is theorizing and we are after facts, and I think that my experience will sustain me, in the assertion, that syphilis may be communicated by vaccination. I am not prepared to say that its transmissibility is not due to a small quantity of blood that happens to get on the point of the instrument, when the operation is performed, by inserting the virus directly from the arm of another, or by a small quantity that happens to get on the crust when removed; but I am forced to conclude that I can see no reason why vaccine lymph cannot as well be the vehicle of contasion as blood itself.

The testimony of a distinguished member of our profession is strong in proof, that syphilis may be communicated by the blood, who affirms that he had constitutional syphilis from a poisoned wound got from operating after the battle of Shiloh. * * *

Yours, truly, J. T. GILMORE,

Dr. James Bolton, in the report from which we have already introduced valuable facts relative to the history and origin of "spurious vaccination," in the *Confederate army*, held that besides these cases which were referable to the imperfect nature of the vaccine matter and to the unhealthy condition of the system, and to the development of latent diseases, others occurred of a far more formidable character.

Dr. James Bolton testified:

So great was the dread of the small-pox in the army, that the men became impatient of the slow process of vaccination by medical officers with carefully selected virus. Common soldiers and even officers became zealous operators. The more powerful the local action the more effectual was the protection supposed to be, and "large sores were in great request." In a short time the most terrible consequences ensued. Large numbers

f men were unfit for duty. The attention of medical officers was called to a wide spread ruly contagious disease. On careful inspection the ulcers presented the various appearnce of genuine chancre. In some instances there was the elevated, cartilaginous, well ut edge surrounding the indolent, greenish ulcer; in others there was a burrowing ulcer, vith ragged edge; in others there was the terrible destructive sloughing process devasating the integuments of the arm. Many of these cases were so situated that their history could be preserved, and in these secondary symptoms appeared, followed in due time y tertiary symptoms, The chancre was followed successively by axillary bubo, sore hroat, and various forms of eruption, (syphilo dermata), while the system fell into a tate of cachexia. Finally, previous vaccination did not protect against this disease. In hort, the disease was genuine syphilis.

Whence its origin? So far as was ascertained by strict inquiry it had in no case been ropagated by a medical officer. In these instances there was no case of true vaccinia ollowed by syphilis. When first seen it was true syphilis, and it never presented any ther phenomena than those of this foul disease. This was true of all cases; the phenomena were those of true syphilis from its inoculation to its development, on to its ermination. There was, therefore, no evidence of the contamination of vaccine virus y that of syphilis.

The results of treatment also corresponded with this view of the disease. The mercurial treatment was the only one which could be relied upon. On account of the scorutic condition of many of the patients it was necessary to use mercury with great caution, and the alterative use of the bi-chloride of mercury was best adapted to the generality of these cases.

The question remains. Whence the origin of this disease in the army? It prevailed host extensively among the troops from the State of Georgia, and it was thought to ave been traced to a soldier from that State, who had returned home on furlough, and who was said to have vaccinated himself from his wife. It was also reported that there were many cases of this form of disease in the neighborhood of his home.

Another source of this disease was said to have been traced to the person of a highly espectable lady residing in the neighborhood of Danville, Virginia.

Finally, a third source was thought to have been traced to Culpeper county, Virginia.

All these accounts of the disease, however, are exceedingly indefinite and unreliable. n fact, they may have been given by some of the men in order to conceal the really impure origin of the disease.

The following propositions may then be fairly deduced as a resumé of the foregoing acts and remarks:

1. That in some instances pure vaccine virus being introduced into a scorbutic system, r one deranged by some other cause, e. g., epidemic influence, an aberration of the henomena of vaccinia was produced, but the patient was protected from variolous contagion.

2. It is highly probable that concrete pus, or some other morbid animal product was sed, and that it produced local, eliminative inflammation, with some degree of constiutional disturbance. In these instances there was of course no consequent protection.

3. In very many cases there was true syphilitic inoculation. In these cases the virus vas unmixed with that of vaccinia. Its source was purely syphilitic. Here again there vas no protection.

From these propositions there result the following corollaries:

1. Vaccinations should only be performed by educated physicians, except in case of ecessity, and then by carefully instructed persons, under their observation. Vaccinaions of themselves and of each other, by soldiers should be strictly prohibitted.

2. Vaccine virus should be carefully selected from healthy persons in whom the disease vas known to have run a normal course.

3. Except in case of necessity, vaccination should not be performed when the system f the subject is in an unhealthy condition.

4. Except in case of absolute necessity, vaccination ought not to be performed when here is an epidemic influence prevailing which predisposes to erysipelas or other congeneric diseases.

APPENDIX TO DR. BOLTON'S PAPER ON SPURIOUS VACCINATION AS IT APPEARED IN THE LATE CONFEDERATE ARMY.

In a paper on spurious vaccination, as it occurred in the late Confederate Armies, I tated that my original paper, and the original sources of information, having been estroyed, I was compelled to write from memory, and was unable to verify my remarks y quotations. Since then I have discovered some fragments of the rough draft of my riginal paper, containing several abstracts of army reports. I therefore respectfully resent these by way of appendix to the paper recently read before the Academy, only egretting that these abstracts are so meager.

Surgeon Habersham, in charge of the second division of Chimborazo Hospital, presented an elaborate report upon a large number of cases of spurious vaccinia which came under his care. He states that in obedience to an order from the Surgeon-General, he vaccinated all the soldiers as they were admitted. Instead of the usual phenomena of vaccinia, a spurious form of disease appeared, which he thus describes:

"A few days after the insertion of the virus, and in many cases within twenty-four hours, the seat of the puncture became very much inflamed, with a deep red inflammatory blush around it, which gradually implicated, in the severe cases, nearly the whole of the affected limb." A pustule rapidly formed instead of a vesicle, which soon discharged an ichorous fluid. This fluid was, in the course of forty-eight hours, converted into a dark mahogany-colored, irregularly-shaped phagadenic ulcer, with everted edges, presenting the appearance of a syphilitic ulcer. There was also more or less pyrexia and loss of appetite. In these highly aggravated cases, successive crops of pustules appeared upon the upper and lower limbs, but never upon the head and trunk.

He observed three grades of the disease differing in degrees of malignancy. Thinking these results may have been due to the impurity of the virus, he cast it aside, and obtained some of a highly respectable civil practitioner, accompanied with the assurance that it had been "used in several cases with a perfect result. The introduction of this virus into the arms of some ten patients, resulted in development of the disease in question in three of them, while in the remainder it produced apparently a true pustule. From this fact, and the immunity which healthy-looking men enjoyed, I was led to believe that the predisposing cause existed in a vitiated and impoverished condition of the blood. There was no evidence to show that its origin was syphilitic."

Surgeon H. regarded the disease as a consequence of "an impoverished condition of blood, being deficient in fatty matter." Accordingly he treated his cases by supplying a rich nutritious food, by the judicious use of alteratives, and by the administration of cod-liver oil. He states that a large supply of this oil was received in the early part of August, and that by the nineteenth of the same month many were well enough to rejoin their commands. The oil was used internally and locally. He arrives at the following conclusions:

1. That the disease is pustular and resembles ecthyma.
2. That it is a local manifestation of a general disorder or vitiated condition of the blood.
3. That this vitiated condition resulted from impure and spare diet, together with inattention to cleanliness.
4. That syphilitic virus had no influence in producing the disease.
5. That the effects were not produced by any impurity in the vaccine virus.
6. That the disease can be removed by those means only which are calculated to improve the general condition and restore the healthy play of all the functions.

W. S. Mitchell. Chief Surgeon of Rodes' Division, thus reports a spurious vaccinia which appeared in January, 1863. Inflammation occurred within twenty-four hours after inoculation. In two or three days a vesicle was formed which was soon followed by pustulation. Some observers state that the eruption was pustular from the very beginning. The ulcers were covered with thick scabs having a tendency to renewal. The ulcers were dry and many had indurated edges with little disposition to granulate and presented a tawney grey color resembling the Hunterian chancre. The hundred and twenty-seven cases which occurred in the Forty-Fourth Georgia Regiment, were derived from one man who was inoculated from his wife, in Georgia. Many similar cases were reported as having, occurred in that State. Some cases yielded to, and some resisted treatment. Some were treated with mercury, and some with iodide of potash, with little advantage.

The best treatment consisted in keeping the ulcers clean and applying nitrate of silver. Many cured in this way showed a tendency to return. The disease could not have been due to canstitutional vice, as the subjects were all previously healthy. It was evident that the constitution was subsequently involved, as all recovered during the Maryland and Pennsylvania campaigns. Two hundred and forty cases left Fredericksburg, all of which recovered on the march. It was evidently not followed by constitutional symptoms. Many similar reports were made by surgeons of other divisions.

Surgeon Read, in charge of the Officers' Hospital, Richmond, Virginia, states that a number of cases came under his care which resisted treatment while at hospital, but that all recovered on being sent to their homes.

The reports of Surgeons Habersham and Read evidently refer to a class of cases not of syphilitic character. Some of Surgeon Mitchell's cases, which were not fully traced out by him, may have proved syphilitic when fully developed. All those which continued to be under his observation seem not to have been syphilitic. Even this, however, is not perfectly clear. The history of the disease is certainly very suspicious. The patients were previously healthy, and the local results resembled strongly those of syphilitic inoculation. The constitution was evidently involved, but neither secondary nor tertiary symptoms were devloped so long as they were under his observation, and the patients re-

covered without the use of what is commonly understood by anti-syphilitic treatment. These facts, however, will not be regarded by every one as conclusive, for it will not be denied that syphilis may be cured without mercury. We are not informed how long these cases continued under Surgeon Mitchell's observation, and secondary symptoms may have subsequently appeared in some of them. Without his knowledge, Surgeon Breckinridge investigated the disease as it came under his observation, and carefully examined the reports of surgeons transmitted to him in compliance with orders. He concludes "that the disease was essentially syphiloid, and in respect as a whole resembled in its incipiency, progress or termination, the genuine vaccine disease. The army was generally in good health. There was some tendency to scurvy, but no connection could be traced between the disease and this condition.

In many cases there were no evidences of a scorbutic condition. The subjects were generally in robust and vigorous health. There was no case in which I had reason to believe that any antecedent constitutional vice, either inherited or acquired, exercised the slightest influence in developing or modifying the disease. Previous vaccination failed to afford any protection against it."

Surgeon A. H. Powell's report:

A driver vaccinated a soldier from his own arm on the eighth day from the date of his own vaccination. Two or three days after there appeared at the place of the insertion of the virus a suppurating ulcer, followed by large unhealthy ulcers on the arm which did not heal for six months. These ulcers were accompanied by an enlarged gland in the axilla. The soldier had two ulcers, a large one at the point of vaccination and another on the back of the hand. Several others were inoculated with the same virus and with like results. Nothing was known of its origin.

Abstract of the report of Surgeon J. A. Etheridge:

Three hundred and thirty-two occurred in Dale's Brigade, beginning as early as January. Inflammation commenced twenty-four hours after inoculation. A vesicle appeared in two or three days, but in some instances the eruption was pustular from the first. These were followed by ulcers covered with thick scabs. The ulcer closely resembled the Hunterian chancre. Two hundred and twenty-seven cases occurred in the Forty-fourth Georgia Regiment, and the virus in all these cases was derived from one man. He stated that he was vaccinated from his wife's arm while at home on furlough, and that there were other cases in the same neighborhood. All the cases in the Twelfth Georgia Regiment were inoculated with virus derived from the Forty-fourth Georgia Regiment. All cases in the Twenty-first Georgia Regiment, with few exceptions, were derived from the same source. The cases in the Fourth Georgia Regiment were derived from a scab obtained from the chief surgeon of the division.

Treatment.—Some were cured by the topical application of nitrate of silver, some stimulating lotions and others by ointments. Some were treated by the internal use of mercury and iodide of potash, but with little benefit. The best remedies seemed to be nitrate of silver locally applied, and cleanliness. In many cases there was a tendency to return.

Cause.—The disease could not have been due to an impoverished condition of the blood, as it occurred in some who had just returned from furlough, and were in high health. Although the disease was not caused by constitutional vice, yet some vice must have existed at the time, protracting the disease and interfering with the cure, since all recovered during the Pennsylvania and Maryland campaign. Two hundred and forty cases existed when the army left Fredericksburg, and all recovered on the march. Although he, at first, suspected it to be syphilitic, he was afterwards satisfied that it was not. No secondary symptoms occurred, and all recovered on the march. At the same time there must have been some constitutional vice, from the disease breaking out after being apparently cured.

Abstract of Report of Surgeon Hicks:

Perfectly pure virus was mixed with some whose history was unknown. This mixture produced vesicles which soon became pustular; in no other instances it produced pustules from the beginning. The suppuration was so profuse that no scab was formed for two or three weeks. After several successive scabs, the ulcer healed, leaving a purple cicatrix. These sores were frequently accompanied by others upon the extremities only. There were no constitutional symptoms. In a few cases there was debility.

Treatment.—Some were treated with mercury, some with iodide of potash internally, and nitrate of silver locally; some were treated with cold water locally and generally. The cold water treatment succeeded best. Anti-syphilitic treatment failed entirely. The worst cases were sent to General Hospital, and the others went with the army. All of the latter recovered speedily. With a few exceptions, all sent to the hospital recovered, but required two or three months' longer treatment. In one case a sore above the ankle healed under the local application of bruised stramonium leaves.

Cause.—It was not scorbutic, because scurvy cannot be inoculated. The officers and men, whether they had been at home or had remained in camp, whether they used scorbutic or anti-scorbutic diet, were equally obnoxious to it. Scorbutic diet will prolong it. It does not protect the system against small-pox. It may be reproduced any number of times on the same individual, no matter how far advanced the sore may be. A hospital nurse, insusceptible of vaccinia, was readily inoculated with this virus. It was not syphilitic, because it did not present the appearance of syphilis and did not yield to anti-syphilitic treatment, which served rather to prolong the disease. No secondary symptoms were observed. It resembles rupia, but this cannot be inoculated.

Abstract of Surgeon Haighill's report:

A soldier was vaccinated on the fifth of April. His arm was healed by the first of May, when a large ulcer appeared on one of his ankles. On the seventh of May, he complained of sore throat, and appeared to have secondary syphilis.

Treatment.—Iodide of potash internally and lunar caustic locally. A general improvement took place under this treatment, but the ulcers had not healed on the ninth of September, more than four months after the first appearance of the disease.

Abstract of Surgeon Rutherford's report:

In nineteen out of twenty cases the virus (lymph?) was taken from the arm of a comrade by some soldier or officer, and not by a surgeon, without reference to the period after vaccination. Matter was often taken

from beneath a scab. Of course this was true pus and not lymph. The only case following the use of a scab resulting in malignant ulcer occurred in Jeffrey's Battery. The scab appeared to be derived from a secondary vaccination. From a limited experience, he concluded that the disease was due to the introduction of pus into the system.

Professor Paul F. Eve, M. D., of the Medical Department of the University of Nashville, as will be seen in the following quotation from his article "On the Health of the Southern Army," believes that syphilis may be transmitted by vaccination.

"*Syphilis in Connection with Vaccination.*—From all I have heard and read on the transmissibility of syphilis by vaccination, the question, from the evidence already accumulated, would appear decided in the affirmative. While I have *seen* nothing confirming this opinion, yet I do know that cases did occur in Richmond, Va., said to be corroborative of it, and that medical officers in the Southern service were specially cautioned as to the sourse whence vaccine matter was derived. Since my return to Nashville, I find that in some instances syphilitic diseases have been definitely traced to the insertion of vaccine matter. My colleague, Dr. Briggs, called my attention recently to a case of this kind, the source of which he entertains no doubt. I failed to see it, as the patient had left for the Hot Springs of Arkansas. When told that he had secondary symptoms of syphilis, he replied that it was impossible, as he had never contracted the primary, though confessing that he was almost daily exposed to it. Two other physicians were consulted as to the affection, and from this history of the case were inclined to the belief of the patient, but stated it looked like venereal. It was subsequently ascertained that this person had been vaccinated from a girl of the town who labored under constitutional syphilis. Not only was the arm very sore, but buboes formed in the axilla, followed by ulcerations in the throat, copper blotches in the skin, nodes, etc.

"The possibility of communicating syphilis by vaccination, was agitated in Italy as far back as 1846; and the transmissibility of this unfortunate contamination was there definitely admitted in 1861, by a committee elected at a Medical Congress at Acqui in Piedmont, at which it was believed that numerous cases had occurred in both children and adults, who had been vaccinated. The names of Pacchiotti, Parola, Ponza, Tassani, of Milan, who I met there in charge of a large hospital after the battle of Magenta and Solferino, in 1859, De Kalt, Hubner, etc., vouch for the accuracy of this report. The transmission of (syphilitic) disease has also been maintained by Lecoq, Rollet of Lyons, and particularly by Vennois in the Archives Générales de Paris, 1860; and on this point, the admission of Dr. D. F. Condie, long known to occupy the front rank in the profession, and who has done so much for its literature, deserves serious consideration; and he publishes these words in a recent number of the American Journal of Medical Sciences:

"'Let it be strongly impressed upon the mind of every physician, lest in his attempt to guard the system against one formidable malady, he inoculate with another, more insidious in its operations, but not less destructive.'

"As to the consentaneous presence of two constitutional diseases in the same patient, and the contagiousness of secondary symptoms of syphilis, it is sufficient for us to state that at a recent meeting of the Academy of Medicine in Paris, the report from a committee, on which MM. Velpeau and Ricord served, (than whom it may be safely asserted two better names for this very purpose never existed in the annals of the profession), decided both these questions in the affirmative."

Dr. O. Kratz, in the following report to the Surgeon General on vaccination, originally published in the July number of the Confederate States Medical and Surgical Journal (vol. 1, 1864, p. 104), supported the view that secondary syphilis could be communicated through the medium of vaccine virus.

ON VACCINATION AND VARIOLOUS DISEASES. BY O. KRATZ, SURGEON, P. A. C. S.

The following remarks on vaccination and variolous diseases have been suggested to me from my own experience. Spurious vaccine and its deleterious influence on vaccination, seem to me worthy of further investigation as a subject hitherto not sufficiently appreciated.

In order to define my stand-point, let me state, at the outset, that Liebig's Theory of Fermentation is, till now, the best to explain the phenomena of vaccination, and that all the anomalies occurring may be best elucidated by this hypothesis. At the same time I do not feel warranted in subscribing blindly to it; but I think we have not any better as yet, and I simply adopt it in the same manner as I would have to conform to the atomic theory in treating about chemistry.

In vaccinating a subject, we introduce, then, the yeast—the virus—into the circulation, to produce the fermentation and its result, the scab. If there is a certain substance in the system for the virus to react upon, the scab will be formed, and the subject is vaccinated. If, on the contrary, this substance is entirely deficient or modified in some way or other, no scab, or an imperfect one, will be the result.

With very few exceptions the good vaccine matter will produce a normal scab on the subject never vaccinated before. The reacting matter in the system is eliminated, and by this process the liability to the infection of small-pox rendered impossible or greatly diminished. Possibly, in a long interval of time, this matter may be reorganized in the body, but never to its original state. I say never, because such a subject may be attacked by varioloides, but never by variola.

If this reacting matter is reorganized as nearly as possible to its original state, the second vaccination will produce a scab also, but never a perfect one. It may be perfect for the protection of the individual on whom it appears, but it offers no guarantee for revaccination on other subjects. I call this a pseudo-scab. This scab may yet retain much of the original fermenting property, but not the same as the genuine. If this virus is used again for revaccination of an individual, its product will offer again less guarantees of being protective. Continuing in this manner the scab will finally contain nothing but common suppurative matter—pus—as if taken from any other suppurating place in the body. The germ of the scab itself will be more or less modified and deviating from its normal structure.

As I have no book of reference on the subject, I quote the following from memory:

Some years ago, the Academy of Science in Paris investigated very closely the fact, if syphilis could be transferred by vaccination. The result obtained by repeated and most direct experiments was, that it could not be communicated by transmission of genuine vaccine virus, from one individual to another, affected with syphilis in any of its stages. Liebig's explanatory theory of fermentation holds good here. The vacoine virus will react only on certain substances in the system and ignore others entirely. We know, at the same time, that matter from a syphilitic suppurating surface will reproduce syphilitic symptoms on another subject.

I have had occasion to observe several well defined cases of Rupia Syphilitica produced solely by vaccination. Other respectable surgeons, worthy of implicit belief, from their scientific attainment, have noticed the same and similar facts repeatedly.

These subjects had never syphilis before, otherwise the inference would have been doubtful or worthless altogether. Therefore, instead of having had vaccine virus inserted, they have been inoculated with syphilis.

I have seen one case, where the product of the vaccination was serpetigo rodehs, a frightful disease of, I believe, cancerous character. Some cases had herpes excedens as the result of vaccination on their arm.

The syphilitic cases had been treated for other cutaneous diseases without any material amelioration. The mercurial treatment removed the symptoms at once.

I have never seen anomalous results from vaccination, if the following precaution was strictly adhered to: The vaccine matter used was taken from a healthy infant, never vaccinated before.

The indiscriminate vaccination and re-vaccination from arm to arm has been, in my opinion, the principal cause of the deterioration of the vaccine virus, and of producing cutaneous diseases from vaccination. A second cause may be found in the fact that the virus used is old and too rarely regenerated by passing it through the cow. Cow virus will fail only 1 in 100; good common virus will fail 3 in 100, if I remember right.—*Confederate States Medical and Surgical Journal*, July, 1864.

The testimony of Dr. Wm. F. Fuqua, of Virginia, formerly surgeon of the Seventh Florida Regiment, C. S. A., is clear and decided. Fifty-two Confederate soldiers, who had been inoculated with virus from the arm of a sailor who was laboring under syphilis, presented the characteristic symptoms of constitutional syphilis, as abscesses in the axillary glands, pain in the limbs and joints, sensation of dryness and ulceration in the throats, buboes, coppery colored spots, and loss of hair, and they were only relieved by syphilitic treatment. If these results of vaccination had been due to a depressed and scorbutic state of the blood, the syphilitic mercurial treatment would have greatly aggravated the diseased condition.

ON THE COMMUNICABILITY OF SYPHILIS BY VACCINATION.

BY WM. M. FUQUA., M. D., APPOMATOX COUNTY, VA.

On assuming charge of the Seventh Florida Regiment, late C. S. A., as medical officer, I found fifty-two men, who had been recently vaccinated, suffering from severe ulcers on their arms at the site of vaccination. Some of these ulcers had scabbed, and to all appearances seemed to promise a speedy "return to duty." There were others varying in size from that of a quarter of a dollar to that of a Mexican dollar. Their edges were hard, shining and everted; in some few cases they were undermined. An ashy-colored slough covered their base, which was from time to time cast off. This, however, was not always a genuine slough, but a tenacious gray and partially organized exudation. These ulcers were offensive, and discharged pus freely. The redness circumscribing them was limited, the limb but little swollen, and the pain of a burning, stinging character. In many instances the lymphatic vessels were much inflamed, and the axillary glands in each case were more or less affected. Many of these patients complained of pain in their limbs; there was some febrile excitement, and their appetites had been much impaired. Having thus briefly described these ulcers, it may not be improper to remark upon the hygienic condition of the regiment.

At this time, it was doing duty at Knoxville, in the department of East Tennessee, and was quartered a mile from town, upon soil which had been previously occupied by troops, who had left the encampment in no praiseworthy condition. To the south, southwest and west, passed the Holston river. The general health of the command was bad—the sick list comprising one-seventh of the command. The prevailing diseases were the malarial fevers and acute diarrhœa.

The first part of the treatment of these cases, consisted in their removal to a more cleanly and healthful locality; cleanliness of person and clothing was enjoined also, General directions were given as regards diet, and of maintaining their bowels in proper condition. The second part of the treatment was the local application of astringents in the milder cases, and eschoratics, varying from the mildest kind to that of the most potential, in conjunction with the astringent lotions in the severe ones. Under this regimen, some few improved; none, however, recovered; by far the greater number grew worse. Abcesses now began to form in the axillary glands; pain in the limbs and joints increased in severity; there was a sensation of dryness in the throats of many, which was speedily followed by ulceration. Our apprehensions were now fully awakened; each day we inquired more and more diligently for some new symptom which might be diagnostic. Coppery-colored spots now appeared upon two; the hair began to fall off in a third, and it was not a week before a syphilitic bubo, in its incipient stage, appeared in another. Heretofore, these cases had been denominated "spurious vaccination." Spurious they were in one sense; but specific in another, in the strictest acceptation of the term.

It is hardly requisite for me to state, that these cases were placed upon a syphilitic treatment, and we had the satisfaction, in a comparatively short time, of seeing a great number of them returned to duty. A few were sent to the General Hospital, one of whom died.

In conclusion, let me remark, that having mentioned to Dr. Frank Ramsey, then Medical Director of the Department, the nature of these cases, he requested me to make a report in detail concerning them, which was done, and in all probability found its way to the late Surgeon General's office.

Upon inquiry, it was definitely ascertained that the virus for inoculating these patients was obtained from a sailor, on the coast of Florida, who labored under primary syphilis at the time of vaccination.—Richmond Journal of Medicine and Surgery, June, 1866.

The following article by Dr. Frank A. Ramsey, of Memphis, Tenn., contains an argument for the possibility of the transmission of syphilis by vaccination, although its author does not feel justified in supporting this opinion in "a strictly professional disquisition." In a letter from Dr. Ramsey to myself, accompanying this paper, dated Memphis, November 15, 1866, he says: "The subject has occasioned me much thought, and incidentally some research, being on the watch for anything, however remote, at all applicable to the question. But I cannot say that I have formed any definite views regarding the question involved."

ABNORMALITIES OF VACCINATION. BY FRANK A. RAMSEY, M. D., MEDICAL DIRECTOR OF THE (Quondam) C. S. A.

It is, after conference, regarded as proper for the following letter to be published. The subject-matter of which it treats, was one of exceeding importance and interest, almost from the incipiency of the intestine strife, in the Southern States, but has not yet had, in the professional periodicals, any exhibition of the attention it elicited, or any declarations of results of observation or of investigation.

I do not deem it necessary to defend now the course of thought taken in the letter, written under the peculiar circumstances connected with the period at which it bears date. It has, however, a reference to a particular opinion, which I would not, at any time, or under any circumstances, support in a strictly professional disquisition ; that opinion had been hastily expressed in the midst of official business, and for the purpose of producing a particular effect, which I honestly judged to be proper and best in the exigency.

Effects, very nearly resembling rupia, followed vaccination, with presumptively pure virus, in so many instances, as induced the Surgeon General to appoint medical officers connected with the Southern army to the duty of tracing, if any, the connection between syphilis and vaccinia; and the prosecution of this duty gave occasion to the letter, now presented in the hope that it will lead others to record their observations, experiences and reflections on the same subject; and with the intention on the part of the writer himself, under other and more favorable conditions, to give the subject further consideration:

MEDICAL DIRECTOR'S OFFICE,
ABINGDON, VIRGINIA, March 20, 1864.

Doctor :—Your note, of March the eleventh, informing me, that you had been appointed "chairman of a committee on the relation of vaccination to syphilis," and making references to my "report of last year," and asking me for "any further information relative to spurious vaccination," has been received; and I take the first opportunity, offered in the performance of official duties, to reply.

I have no facts, which have occurred within the field of my observation, directly relating to the sunject, as stated by you; but, with your permission, will continue writing, until I have given you something of the operation of my mind, occasioned by your note.

I thank you for the honor you have done me, in preferring the request, and in the reference you have made to, I presume, a letter written by me, to a surgeon at Chattanooga. a copy of which I deemed proper to forward to the Surgeon General. That letter was written, as I now write to you, *currente calamo*, and though I preserved a copy, it was left at Knoxville, and has doubtless fallen into the possession of the enemy. I am, therefore, prevented from making reference to it, as I am debarred from any ability to consult authority, or to refresh my memory, as I should, and would do, if differently situated. But, if I correctly remember, the latter was not of such a character as to convey an idea, that the observations were of cases of spurious vaccination Indeed, the basis of the letter was furnished by observations of results, or effects following the introduction, or inoculation of vaccine virus undoubtedly pure. And though the result or exhibits were in their course, certainly not such as ordinarily present from vaccination, or as are usually recognized as essentially cow-pox ; yet observations were not sufficiently numerous, or continued for a time long enough, to determine whether any, or the same degree of immunity from small-pox was occasioned in subjects thus affected, as in those who presented the ordinary course of the cow-pox disease.

There were, however, practitioners of medicine who were esteemed, in communities in which they labored, as capable observers, who affirmed that these subjects were as free from liability to small-pox as those in whose economies the vaccine disease had exhibited nothing unusual in deviation from its regular course. If, then, the scab was undoubtedly a pure vaccine scab, and the effect was perfect, or relatively perfect, immunity from small-pox, notwithstanding there was nothing observed from the application of the virus, until the production of the ultimate effect, at all like vaccine disease in progress, the disease, I think, cannot properly be termed spurious. To be spurious, the vaccine virus must not be in the scab, or the effect must be an absence of any protective energy having been impressed on the economy into which the scab had been introduced. Varioloid consists of exhibits in course, differing from variola in course; yet no one, I presume, would feel himself justified in terming it spurious small-pox, because it is known to proceed from small-pox virus, will communicate small-pox, and leaves the economy it has effected impressed with immunity from a future attack of small-pox. Varioloid is, then, not spurious small-pox, but small-pox modified in its exhibits in progress through an economy previously impressed by the operation of the virus of cow-pox. Here the modifying cause is known.

So by analogy, the cases which gave occasion to my letter of last year were, each, an instance of modified cow-pox. The matter was obtained from Nashville, Tennessee, from Atlanta, Georgia, and from Richmond, Virginia, from surgeons of reliability, and the same results were observed to follow upon the introduction of the several matters, in some instances regular vaccinia, in others abnormal exhibitions; indeed, in many an approximation to the regular exhibition of the original poison from cow matter could not be discovered. And professional men, who were not destitute of reputation for capacity, affirmed, on the strength of observations sufficient to satisfy them, that the economies thus effected were impressed with immunity from small-pox as though they had passed through cow-pox in its regular exhibitions.

True, to make complete the analogy I have instituted, it remains to establish by experiment, that true vaccine in its regular exhibitions, in one instance, or more, can be produced by the inoculation of matter from one of these economies. Which experiment, however, I will leave to some one with more curiosity and temerity than I have, feeling satisfied myself, that they were modified cow-pox. But in these instances, the modifying cause is unknown. It must, however, have obtained an union with cow-pox matter, in its passage through an economy peculiarly affected, and, therefore, resided in the scab, not altered from its ordinary physical appearance, because, as yet, not sufficiently imbued with the acquired and modifying contagion. Or, it must have been a peculiar condition of the individual economies, into which the vaccine virus was introduced. Or, it must have been telluric or celestial relationships sustained by the particular persons affected; or, as Sydenham's comprehensive term is applicable in giving expression to such relationships—"the epidemic constitution."

In my previous letter, I believe, I advanced this last as sufficient to account for the abnormalities which have been observed. It is the more easily assumed, and probably the more easily sustained position. I will, however, not undertake to defend it here, for, notwithstanding my great respect to the "epidemic constitution," when I am at the bedside of a patient, I can, when I am reflecting, readily comprehend, that either one or all the positions may be defended, as the source of cause in its influence modifying cow-pox.

Will vaccine virus become possessed of capacity acquired in its passage through an economy peculiarly diseased, to propagate such disease in other economies? The question thus stated, will in some degree, embrace the relation of vaccination to syphilis.

Whether there is truth in the doctrine which has been promulgated, that two distinct contagious diseases cannot exist at the same time, in the same economy, it is not amiss to make reference to it here; for if it is not true, the fact does not justify the assumption that two poisonous causes cannot be introduced into an economy at the same moment, one having the office of vehicle for the other—does not justify an assumption that two poisonous causes in the same economy, at the same time, can occasion no modification, each of the other, or the one of the other—and if it is true, the fact or modification is at once established. More directly assertive of the virus acquiring a modifying capacity, even to the complete destruction of original physical appearances, and exhibitions of effects, is the idea suggested during the year 1800, by Richard Dunning, Surgeon, Plymouth Dock, that "the vaccine disease, united with some other virus, may have afforded the more active affection of variola." Dunning's reviewer, from whom I received my information, says "the hint deserves some attention, as a point of speculation, which cannot be subjected to the test of experiment."

I only make reference to it as an assertion made long ago, that one virus may be modified by another; for I do not regard the poisons of variola and vaccinia as being at all identical. This, I think, is evident, if there is truth in the following statement: Small-pox and varioloid will produce small-pox, but never cow-pox. Cow-pox will produce cow-pox, but never small-pox or varioloid. Cow-pox will prevent the occurrence of small-pox, or mitigate its severity, and lessen its mortality in the human economy. Small-pox having occurred in the human economy, is not preventive of cow-pox, if its poison be introduced by inoculation. Cow-pox, reproduced in the human system, inserted into the teat of the cow, will produce cow-pox. Small-pox, similarly introduced into brute animals, will not produce small-pox. This last assertion is made by Wm. Woodville, M. D., London, 1800, and by others, perhaps before, and several times repeated since; and within the past two years medical officers in the service have attempted, at Greenville, Tenn., to occasion small-pox in a cow, in one instance, and in a calf in another instance, using matter taken from a case of confluent small pox then under treatment, and inserting it under the cuticle, and introducing it into the stomachs, mixed with food, and without any bad effects whatever, or any disturbance of the health of the animals. I am aware that observations have been published, seemingly different from this, but there is a want of explicitness in connection with their relation which justifies a doubt of authenticity. But this, if you please, by way of parenthesis.

The most insidious of contagious poisons affecting the human economy is, probably, the syphilitic. It has, doubtless, occurred to almost every practitioner to observe cases in which the subjects were known to have been treated for syphilis, and afterwards to have

exhibited for many, very many years, entire health, when occasion, known or unknown, presented, and they offered themselves for treatment, affected with disease which the physician pronounced to be syphilitic, and which could not be cured, except by the administration of anti-syphilitic agents. The poison had remained latent or dormant for these many years, only awaiting circumstances or conditions favorable to the exercise of its capacity to effect. I had under my charge, for twenty years, a family, the children of which were generally healthy, whose father was treated for syphilis from the age of nineteen to twenty-four, since which he has enjoyed good health, seemingly, in every particular. His children, however, were frequently attacked with illness deemed sufficient to require my professional attention. No odds how simple the attack, even though when I first called, the evidences were nothing more than those of slight catarrh, I have never known them yield or mitigate until one dose, or more, of a mercurial—generally calomel—had been administered. This I have ascribed to the presence in their economies of the syphilitic poison derived from their father, and exerting an influence retarding healthy developments, or preventing the disappearance of symptoms of diseased action not in themselves syphilitic. The cases cited in "Montgomery on Pregnancy" bear well on this point. A woman married a man with latent constitutional syphilis. She became infected, which was first exhibited at conception, or in miscarriage, followed by secondary symptoms of syphilis. A woman contracted syphilis, was treated and recovered. A considerable time afterward she married. One, two, or three children were born, all affected with syphilis. The husband died, and the woman married again, a healthy man; and to this husband children were born, and all died, except one, affected with syphilis; the exception had mercury and recovered. One of the children communicated syphilis to the woman by whom it was nursed.

But the insidiousness of this contagion is more strongly exhibited in another case, cited by Montgomery. A woman, whose husband had constitutional syphilis, gave birth to a child; which died with syphilis in two months, the mother remaining wholly free from any exhibits of the affection. This husband died, and she married again, a healthy man. Four years after the former birth, she was delivered of a child, which, in a few months, presented the same syphilitic appearance manifested by the child of the first husband.

If these instances are, as observers affirm them to be, true, how little effort does it require for the mind to conceive the probability of a vaccine scab, having acquired the capacity from an economy, affected with syphilis, to propagate that disease? If a woman can remain in health, after sexual congress with a man affected with latent constitutional syphilis, and yet, years afterward, give birth to syphilitic children, begotten by a healthy man, it is within the bounds of legitimate assumption, to affirm that syphilitic exhibits may be manifested in an economy, by the introduction of vaccine matter, taken from an economy tainted with syphilis, even though it is in that system in latency, and had never been developed.

Two of the cases which gave occasion to my letter of last year, were ladies whose husbands occupied prominent and responsible positions in society. Neither the husbands or wives were at all under suspicion of immoral taint. The wives were vaccinated, and for many months were affected with ulcerations, which under other circumstances, would have been, without hesitation, pronounced to be syphilitic rupia. They came under the care of Acting Assistant Surgeon Meadows, then, as now, in charge of small-pox hospitals in this department. He put them on the use of bi-chloride of mercury, and they both recovered in ten or fifteen days.

Permit me to summarize. Two contagions may be introduced into the human economy at the same moment of time, and connected with the same vehicle; or, one contagion may be the vehicle of another, and each may exert its own ultimate effects, the intermediate effects being the exhibitions of but one or the other of the contagions having made impression; or the intermediate effects may be the exhibitions of one poison, which, having passed their course, the intermediate effects exhibiting the presence of the other poison, supervene and pass their course. Syphilis and vaccine. Two contagions may respectively modify each other. An illustration does not occur to me. One contagion may modify another, and while it is itself not subjected to a modifying influence, exerted by the one it has modified, it may be modified by another contagion. Cow-pox and small-pox, cow-pox and syphilis. The introduction of one contagion into an economy may arouse another which has remained dormant, or latent, and unsuspected. Cow-pox and syphilis.

An item relative to the treatment of small-pox: Acting Assistant Surgeon Meadows, in two cases of small-pox occurring in children, employed croton oil, applying it on the third and fourth day of the active fever to the breast, producing full and confluent pustulation. The immediate effect was certainly unpleasant—very considerable cerebral disturbance, evidently, in its intensity, ascribable to the croton oil pustulation; but he is convinced that the course of the disease was shortened two-thirds, desquamation beginning on the seventh day instead of during the second week, and that the eruption was one-half less than it would have been under other circumstances. He has also prac-

ticed opening each pimple just as it assumed the vesicular character, with the effect, he believes, of expediting the process, desquamation occurring one-third the time sooner than usual.

I have written, Doctor, hurriedly, but I hope that I have not been so rapid as to have failed wholly of interesting you, at least for the moment.

Very respectfully, your obedient servant, FRANK A. RAMSEY,
Surgeon and Medical Director, P. A. C. S.

To James Bolton, M. D., Chairman Committee on the Relation of Vaccina to Syphilis, Richmond, Va. (The Medical and Surgical Monthly, May, 1866, p. 140-147.)

Dr. Crawford, of Greenville, Tenn., was able to trace the impure virus which produced indurated ulcers and constitutional symptoms, to a single individual, and the disease thus disseminated by inoculation, yielded to the remedies best adapted to the treatment of syphilis:

GREENVILLE, TENN., January 27, 1867.

Professor Joseph Jones, M. D.:

Dear Sir—Having seen in the January Number of the *Nashville Journal of Medicine and Surgery*, a circular letter addressed by you to the surgeons of the late Confederate Army, instituting inquiries upon "Spurious Vaccination," I desire to respond to your inquiries, and to communicate those facts in my possession which may throw light upon this subject, which is fraught with so much interest to humanity and science.

During the winter of 1862 and 1863, I was "Surgeon in Charge" of the "Madison Hospital" (Confederate) at this place, during which time over 1000 patients came under my charge. Small-pox made its appearance in the hospital fifteenth November, 1862. In anticipation of the appearance of the disease, I had some time previous procured a fresh supply of genuine vaccine virus by vaccinating some healthy children. In this way I had kept a fresh supply on hand since 1856—that is, by vaccinating some healthy child every few months. I immediately ordered all patients then in hospital (350) to be vaccinated—both those that had been, as well as those that had not previously been vaccinated. The matter took well upon all who had not been vaccinated, and imperfectly in some cases that had been vaccinated. A "pest-house" was established, and the infected, as soon as the nature of the disease was manifested, removed at once to it. The disease did not extend to the patients in hospital; but from time to time patients were admitted, many of whom proved to be suffering with variola. But in no single instance was the disease communicated to those that had been recently vaccinated or re-vaccinated, and but six cases of varioloid occurred out of the 350 patients, all of whom had been exposed to the contagion of small-pox.

There was great alarm, both among citizens and soldiers; for the small-pox cases were exceedingly fatal, owing to the want of proper comforts and attention. Out of ninety cases, forty proved fatal. Neither the citizen nor soldier was satisfied of his immunity from danger, unless he could make a "*sore*" of some sort upon his arm. Consequently vaccination was perseveringly sought from the ugliest and foulest looking ulcers. The idea being with the masses, that vaccination loses its effects after a few years, and must be renewed; if a sore was not produced by matter from one arm, another was sought. This state of things continued without any mischievous effects until about the first of January, 1863, when Col. Clayton, then Commander of the Post at this place, who had been on leave of absence some weeks in North Carolina, returned with an ugly looking ulcer upon his right arm which was reported to be genuine matter. The cry of *eureka* was raised, and it was not long until dozens, both citizens and soldiers had this matter inserted into their arms. From this dates the history of "Spurious Vaccination." Col. Clayton had been successfully vaccinated some years before; but so soon as it was known that we were in the midst of the most loathsome of all diseases, I re-vaccinated him twice with genuine virus, but without effect. What the history of the case was from which he received the infectious matter, I never learned, for the Colonel could not find out. Col. Clayton was about twenty-one years of age, sanguine temperament, and in excellent health at the time he received the infectious matter into his arm. The ulcers I regarded at the time, and still regard, as caused by inoculation with *syphilitic virus*. The cases ran an indefinite course of from three weeks to six months, and yielded only to *Blue Mass*, *Iodide Potassium*, internally, and *Sul. Cupri.* externally. Some cases taken in their incipiency, yielded in a few days to the external treatment alone.

It is proper to state that there was no tendency to scorbutic disease among either soldiers or citizens, and the infectious matter was equally as severe among the citizens as soldiers. The hospital was well provided with everything calculated to promote comfort and health. The patients were in good houses, had plenty of clothing, and rations in abundance, such as fresh meats, fruits, potatoes, cabbage, etc. There was no scarcity of these things in this country at that time, and what the Government did not provide the citizens supplied with a liberal hand.

This "spurious vaccination" yielded no protection whatever from variola. I have seen more than a dozen cases of variola occur where there were large ulcers from this spurious virus, the patients thinking they were protected from the disease by such *sores*. The spurious matter would take effect in all cases and all sorts of constitutions.

About this time orders were issued from Surgeon General Moore to procure fresh vaccine virus through the cow. I tried the experiment three times without succeeding. First on a cow seven years old, with a calf six months old. Then a young heifer two years old, and finally the calf. I inserted the matter in the teats, nose, ears and various parts of the skin, but never succeeded in getting a crust. Finally I fed the calf on the dried scabs mixed with its food, but it died without yielding me the much sought for treasure.

In August, 1863, the Confederate Army evacuated East Tennessee, and in September, 1863, the Federal Army took possession and held for a time. That army, under Gen. Burnside, was composed of new recruits, made up mostly of six months volunteers, many of whom had not been in the service three months. This same disease was among them. This army was abundantly supplied with anti-scorbutics, and fed with a liberal hand, and had never been exposed to hardships.

My best wishes for your success in your undertaking.

Yours sincerely, S. P. CRAWFORD.

If such accidents had been confined entirely to the Confederate Army, or to the period of the war, when the citizens were to a greater or less extent subjected to unusual privations, and to the action of the most depressing causes, the views of those who denied emphatically the possibility of transmitting the poison of constitutional syphilis by the process of vaccination, would receive at least a show of support from the apparent dependence of the abnormal phenomena accompanying the vaccine disease, upon the depressed and deranged states of the system, induced by improper nutrition and physical causes.

It happened, however, that a large number of cases, which were referred by both citizens and physicians to the contamination of the vaccine virus with the syphilitic poison, occurred in the quiet manufacturing community of Graniteville, after the close of the war.

Under the kind, liberal and efficient management of the intelligent head of the Graniteville Manufacturing Company, the operatives enjoyed comfortable dwellings and abundant supplies of nutritious and wholesome food. This class of the population of South Carolina were, perhaps, more favorably situated as to subsistence and support, than the great majority of the citizens of South Carolina, whose dwellings and barns had been laid in ashes, and whose social and agricultural system, the growth of centuries, had been so completely overturned as to convert, without warning, the richest into the poorest.

The following report of Dr. W. F. Percival, of Aiken, South Carolina, is important, as being the most clear and intelligent statement which I was able to obtain, after considerable inquiry:

REPORT ON THE COMMUNICATION OF SYPHILIS THROUGH THE MEDIUM OF VACCINE VIRUS AMONGST THE INHABITANTS OF GRANITEVILLE AND VICINITY, 1866. BY W. F. PERCIVAL, M. D., OF AIKEN, S. C.

AIKEN, November 15, 1866.

Professor Joseph Jones, M. D.:

Dear Sir—I received your letter yesterday, and inclose a copy of my report on spurious vaccination with pleasure. I intended sending it to one of the medical journals, but have never had time to revise and prepare it for publication; the *facts*, however, are all stated.

I am, with high esteem, yours very respectfully, W. F. PERCIVAL.

Spurious Vaccination.—The Epidemical Society of London prepared four questions on the subject of vaccination, to be addressed to the most eminent medical men in Europe. The third was as follows:

Have you any reason to believe, or suspect, that lymph from a true Jennerian vesicle has ever been a vehicle for syphilitic or other constitutional infection? Among the number who responded (over 400), but three asserted their belief, twenty-seven in doubt and nine had no experience. The rest asserted that it could not be done.

In a report from the College of Faculty of Medicine, at Prague, the following language is used: "The possibility of inoculation with syphilis by means of vaccination, (although not a single completely attested fact is known in this country,) is not to be excluded, for the conveyance of syphilis, by means of inoculation, has been placed beyond a doubt."

In the face of so much testimony against the possibillity of such an occurrence, the following report will perhaps throw some light on the subject.

About the last of April, 1866, I was requested to take charge of some cases of spurious vaccination, at the manufacturing village of Graniteville. One hundred and fifty cases were presented for examination, men, women, and children, of all ages, from fifty years to twelve months. The larger proportion were operatives in the factory, the others engaged in out-door work. There was every variety of constitution, from the pale attenuated girl, to the hardy and robust laborer. Of the one hundred and fifty cases, ninety-three had been previously vaccinated. The appearance of the sore was identical in every case, viz; an excavated ulcer, of circular form, with raised and hardened edges and base. They varied in size, from one half to two inches in diameter, covered with grey or dark sloughy matter, and secreting unhealthy pus. There was no appearance of granulation. In some cases ulcers of a similar character, appeared on the arms affected; others on the opposite arm, and in a few on the lower limbs. In some, abscesses formed on the inside of the arm, and in nearly all the axillary glands were inflamed, and many suppurated. A thick and unhealthy crust would form, to be soon separated by the pus which accumulated beneath. In one case, there was a copper-colored eruption on the body and limbs; in two or three the hair dropped off. None of these cases were in the primary stage. The disease had existed from three to eight weeks. Most of them pursued their ordinary avocations, as far as possible, and complained of no constitutional symptoms, or any loss of appetite.

The history of these cases, as given to me by the individuals first vaccinated, was, that they had obtained the virus from a man whom they afterward discovered to have had primary syphilis. One was vaccinated from another, and so it spread. None of the ulcers had evidenced any tendency to heal. One of the worst cases was a man who, two years previously, had small-pox.

The usual treatment, both constitutional and local, for venereal ulcers, effected a cure in from three to six weeks.

It might be supposed that the predisposing cause of the ulcers existed in a vitiated condition of the blood, dependent on local causes, but I had twelve or fifteen cases in other localities, some of them ten miles distant. All of these had obtained the virus with which they were vaccinated at Graniteville. All of these were strong and healthy individuals. Again, most of the cases reported had been vaccinated a short time previously, and had progressed in the usual manner without any trouble, showing that no local cause had produced any derangement of their system.

As I did not see the individual from whom the virus was first obtained, I am unable to say that he really had primary syphilis.

I cannot, therefore, draw positive conclusions from the above cases, and only present the report as information.

On the other hand, many of the Confederate surgeons entertained views similar to those announced by Dr. Habersham, and denied that any of the cases of spurious vaccination were syphilitic in their origin or relations.

Thus, Dr. S. F. Stout, of Pulaski, Tenn., formerly Medical Director of the general hospitals attached to the Army of Tennessee, in his reply (dated near Pulaski, November 19, 1866) to my inquiries, says:

I am not satisfied that there occurred a well-authenticated instance of the propagation of secondary syphilis by means of the so-called spurious vaccine matter. I think that the injurious effects were chiefly produced upon persons already diseased syphilitic, scorbutic, or while living in an atmosphere infected by the causes of gangrene and erysipelas. A vast majority of these cases were those of individuals who had been previously vaccinated, and in very many instances the virus used was taken from the arms of re-vaccinated individuals. Thus, common pus, and even ichor, was no doubt inoculated, which produced effects similar to those that are caused by a wound received while dissecting a dead body, modified in many instances, no doubt, by the condition of the patient's health and the morbific influences to which he was exposed.

Prior to my assumption of authority to take steps to stop the evil, I am satisfied that there were several errors in practice among our troops. First, the order requiring all soldiers to be vaccinated, whether they had been previously effectually vaccinated or

not. This order was literally interpreted and acted on by the superintendents of vaccination appointed by the Surgeon General. Secondly, many soldiers, ignorant of the characteristics of genuine vaccinia, vaccinated themselves, or each other, without consulting a surgeon. Thus, no doubt, common pus, and even ichorous matter, were often inserted. Thirdly, when variola first appeared in our army, so great was the fear of the disease, and the consequent anxiety to vaccinate everybody in the army, or in its vicinity, that the temptation to the surgeon to use any virus within his reach was very great. Thus, much matter was used which ought to have been rejected by surgeons.

In my investigations I could not learn of a single well authenticated instance in which due care had been taken in the selection of the virus, whether in the form of lymph, or of the dried scab, that was accompanied by the evils of so-called spurious vaccination, in a perfectly healthy individual, in an atmosphere uninfected by erysipelas or gangrene. Believing these conclusions to be correct, when as Medical Director of the hospitals I undertook to relieve the army of the evil, I made provisions to supply it with virus taken only from the arms of healthy children, who had *never before been effectually vaccinated.* By the zeal and energy of medical officers designated at every hospital post, from supplies of virus obtained from the Surgeon General, S. P. Moore, and Surgeon J. C. Mullins, superintendent of vaccination of my department, appointed by me, the army in the field and the hospitals in the rear were amply furnished with virus from healthy children. No soldier was vaccinated with matter taken from another soldier.

The supply was so abundant that there was not temptation to use any other part of the dried crust than the vitreous, mahogany-colored portion. I recommended that no soldier who had been vaccinated within a few years past, and who had the characteristic mark, should be revaccinated, unless positively known to have been exposed to variolous contagion; and especially, if he were laboring under any form of syphilis, or was scorbutic, or was living in an atmosphere infected with gangrene or erysipelas.

Under this practice the so-called *spurious* vaccination disappeared from our army, and before the close of the war it might be said to have ceased to exist in Georgia.

Having thus far entered into a statement of the impressions I have, and of facts bearing upon the subject, it may not be amiss to say to you that my observations and experience during the war has confirmed my faith in the prophylactic powers of the Jennerian virus. I use the term Jennerian to designate that vaccine virus which has been propagated from that originally supplied by Jenner. The immunity of so many thousands of soldiers and officers witnessed during the war, and the comparatively small number of the vaccinated who were attacked with variola or varioloid, enhance my estimate of the protective power of vaccinia, rather than diminishes it, as has been the case with many whose field of observation has been comparatively smaller than mine.

The testimony of Dr. E. A. Flewellen before the United States Military Court, in the trial of Henry Wirz, is of interest in this connection, in so far as it relates to the prevalence and nature of spurious vaccination in the Western Army of the Confederate States.

MEDICAL TESTIMONY—THE CONDITION OF THE PRISONERS IN THE HOSPITAL.

September 28, 1865.

Dr. E. A. Flewellen for the prosecution.

* * * * * * * * * * * * *

VACCINATION.

Q.—Can you tell us what effect vaccination had upon your own soldiers and citizens?

The Witness—Do you mean spurious vaccination, as it is called?

Mr. Baker—Yes, sir.

A.—The first I ever heard or knew of spurious vaccination—

The Judge Advocate—State only what you saw or knew at Andersonville.

Witness—I know nothing about the vaccination at Andersonville.

Q.—Go on and state all you know about spurious vaccination anywhere throughout the Southern Confederacy.

The Judge Advocate objected to the question, on the ground that even if it could be proved that persons throughout the South were poisoned by means of vaccination, it would furnish no proof that prisoners of war at Andersonville were not so poisoned, and could not in any way exculpate any one who was inculpated by the evidence already brought before the court.

Mr. Baker argued that the question was proper. The defence proposed to show that the same effects experienced from vaccination at Andersonville had been experienced throughout the whole South; that the same matter used at Andersonville, was so far as could be ascertained, used in various places throughout the South, and had similar effects on soldiers and private citizens.

If the defense could show that this vaccine matter was used upon Confederate soldiers, and produced the same results as those testified to in the case of Federal prisoners, it would tend to rebut or disprove one of the elements of the alleged conspiracy.

The court, after deliberation, sustained the objection.

Witness.—I know of the effects of vaccination on the troops in Georgia.

Q.—State to the court what their effects were on your troops.

Objected to by the Judge Advocate, unless it could be shown that the vaccine matter used for the Confederate troops was obtained from the same source as that used on the Union prisoners.

After deliberation the objection was overruled.

A.—While the army of Gen. Bragg was at Tullahoma I was medical director, and I know that very great complaint was made to me as to the character of the vaccination practiced in the army. A large number of men were represented as unfit for duty. I think that one division represented nearly a thousand men as unfit for duty on account of spurious vaccination. I saw a number of cases in the early progress of the vaccination, but they presented nothing abnormal that I could detect. But, as it advanced, the cases seemed to have the appearance very nearly of syphilitic rupia. It diffused itself more or less over the whole surface. A large number of surgeons regarded it as a complication of vaccinia and syphilis. Finally they settled into the opinion that it was not syphilitic. There never was, I may say, any settled opinion among the surgeons of the Confederate Army as to what was the true character of this impure virus. (40th Congress, second session, House of Representatives, Ex. Doc. 23; trial of Henry Wirz, pp. 472-473.)

SMALL-POX EPIDEMIC IN MOBILE DURING THE WINTER OF 1865-6. BY J. C. NOTT, M. D., OF MOBILE, ALABAMA.

MOBILE, December 12, 1866.

Joseph Jones, M. D.,:

My Dear Sir—Your letter of the fifth reached me yesterday, and I regret to have to plead ignorance again on the subject in hand. I have had to treat a good many cases of spurious vaccination, but have no clear facts as to their *origin*. Many of them *look* syphilitic—rupial sores, etc.—they are more properly syphiloid. I am not sure but the ugly sores we saw in the army are as anomalous as many other forms of disease which seemed to result from crowded camps and hospitals, foul air, bad diet, etc.

Dr. J. T. Gilmore, who was a medical director in the Virginia Army, saw a great deal of this spurious vaccine, and has promised me to write you about it. We have in Mobile a medical society, and it is the duty of each member in turn to read a paper once a month. Some six or eight months ago, in the performance of this duty, I threw together some rough and hasty notes on vaccination, etc., which I send you in their rude state. If you can find any useful idea or suggestion, you are at liberty to use it as you like.

Very respectfully and truly yours, J. C. NOTT.

The extraordinary prevalence of small-pox in Mobile during the winter just passed, presenting all the characters of a true epidemic, deserves to be placed on record as a matter of history, and deserves much fuller detail than I propose at present to give it

The reason for this extraordinary prevalence of small-pox not only in Mobile, but more or less throughout the whole of our Southern States, is very obvious. It is now about ten months since the close of our civil war, which has thrown our population into great confusion; and the negroes having been suddenly liberated, have from various causes been congregated in towns, and freed from their accustomed restraint and the fostering care of former masters. A large portion of them had never been vaccinated, scarcely any vaccinated, and they therefore afforded an unprecedented amount of material for the disease. Fully nine out of ten of the deaths from small-pox have been among the freedmen.

The disease having been scattered by this class, through all parts of the city and surrounding country, the whole atmosphere became infected, and a true epidemic constitution established. A great many of the old citizens, both white and black, have been attacked by varioloid. The cases, however, among the better class, who have been in the habit of paying proper attention to revaccination, have been few and mild.

With regard to the protection afforded by vaccination, I must say that it is difficult to imagine a more perfect triumph than that of the immortal Jenner. My own experience leads me to declare that I have not seen more than three or four cases of varioloid amongst those I have been in the habit of attending and revaccinating; but I must add that I have paid no attention to age; I have revaccinated young children as indiscriminately as the adults and aged, and have seen no appreciable difference in their susceptibilities either to vaccine or to varioloid.

It has been evident, from the intense epidemic constitution of the atmosphere, that we should, had it not been for vaccination, had at least three-fourths of our population attacked by small-pox. There have been treated in the pest house alone, up to the present date, March 20, 1866, about six hundred cases. One hundred and eighty cases are now under treatment in that establishment, and there seems to be no abatement in the progress of the disease. I think it would be within the mark to say that at least three thousand cases of small-pox of all grades had occurred in Mobile during the past five months.

The panic produced has caused almost all of our old citizens of all ages to seek revaccination, which have given some interesting results. Many adults, vaccinated in early life and exhibiting good cicatrices, have received the vaccine in a spurious form, though their systems had refused it several times previously since the first vaccination, thus showing that when an *epidemic influence* is prevailing, the vaccine is much more apt to take effect in some form. This fact has been noticed by writers on the subject, and has been very striking in the prevailing epidemic. In not a few, also, bearing good marks from childhood, who had

repeated revaccinations in former years, the vaccine this year has taken perfectly and run its course regularly as in those newly vaccinated. Such patients, doubtless, were in danger of taking genuine small-pox

How long does vaccination, when done in childhood, protect against small-pox? Does it really *wear out* in a given time, or at all? Were I to judge by my own experience, it never wears out, and time has little influence on it. If the system is once *fully* affected, it is good for the life-time; in order, however, to be sure that the system *is* fully affected, it is proper to repeat the vaccination several times till the system fairly refuses good virus.

It should be remembered that when the population of a town is exposed to the influence of small-pox, or any other epidemic disease, a considerable per centage of them are not susceptible to the disease at *that time* and will escape it. Members of the same family will not communicate it to those around; even children sleeping in the same bed with others sick of small-pox will not take it. Why these immunities we know not, but yet the facts are indisputable.

So with the vaccine. Suppose you are called upon to vaccinate half-a-dozen children, and it is performed on them all at the same time and with the same virus. What happens? One may not receive it at all; in all the others it may take, showing its characteristic vesicle, but affecting the individuals in various degrees, thus showing different grades of *susceptibility*. In one a good vesicle will appear without constitutional symptoms, in another the vesicle may be accompanied by high fever, glandular swellings, etc., and the others will present intermediate grades of effect.

Now the one which did not respond at all to the vaccine virus, if exposed to small-pox, might not at *that time* take the disease, on account of a *temporary insusceptibility*, but at some future day under similar exposure might be attacked by confluent small-pox. The one which took the vaccine so fully as to develop severe local and general symptoms would probably be protected for life, against either vaccine or variola. The other children which had mild local symptoms, and little or no fever, if exposed to small-pox in after life would be attacked by varioloid in various degrees, according to the degree of susceptibility left in the system. If vaccinated after one or more years, the vaccine would again show to a greater or less extent its characteristic effects on some of the cases, thus proving that the system had not been fully affected by the first vaccination, and consequently not fully protected against the poison of small-pox.

Now in the case of these six children, it must be remembered that when they were vaccinated the first time, the morbid poison was *forced* upon the system without any regard to its *present* susceptibility. The system might be disposed to reject it entirely, or to receive it in various degrees, just as when exposed to contagious diseases in the natural way. Some children during the present epidemic, could not be brought under the influence, and in one case of a healthy child of three months old, it did not take until the ninth trial.

We have no criterion, by which we can tell before hand what is to be the effect of any disease on individuals. Suppose small-pox, diphtheria, or scarlet fever appears in a boarding-school, what happens? Some escape entirely, and the others are affected in all possible grades. Here you may say that the disease is again *forced* upon the subjects, and they receive or reject the poison in whole or in part, according to the condition of each individual. There is this great difference in the two cases. In the boarding-school example, the children take the disease in the *natural* way, and each one may receive or reject it as the system chooses; but in the case of vaccination the poison is *thrust into the blood* of the subject by the physician without any regard to the present susceptibility, and the system is compelled to fight the enemy as it best can. Under these circumstances it is rational to conclude, that in the case of vaccination, the system being forced, resists the influence of the virus to a certain extent in many instances, and thus leaves the system but partially protected, against the poison of small-pox.

Another important question arises as to the *duration* of the protecting influence of vaccine. Does it "*wear out*" in a given time, or at any time during our three-score-and-ten? I confess that I have never seen any facts to prove that it does wear out, where the system has been once *fully* affected. How many hundreds of individuals does every physician see in whom one vaccination in childhood protects perfectly against both small-pox and vaccination through life? There are ten thousand of such cases to prove that vaccine *does not* wear out. My own experience, which corresponds with that of the other physicians of Mobile during the present epidemic, goes to prove that in vaccination the virus just as often takes effect in children of all ages, from one year upwards, as in those vaccinated half a century previously. I have, during the past few months, seen scores of children bearing good marks, from the ages of one to eight or ten years, in whom the revaccinations have taken, or who have been attacked by varioloid. I have also seen scores of all ages who were insusceptible to both forms of this virus.

I have seen no evidence whatever that time has had anything to do with the protecting influence of vaccine; but much that it depends almost entirely upon the efficiency of the first vaccination. It is, however, proper to vaccinate again and again, as we have no criterion to go by but the repeated refusal of the system to receive it.

It has been curious to see how the epidemic constitution of the atmosphere has gradually deepened. It seems now to be breaking through all barriers. Some few have been attacked twice within three months by varioloid—many have had varioloid who have been vaccinated again and again—the vaccine has taken either well, or in spurious form, in some who had rejected re-vaccinations repeatedly before. In those who had never been vaccinated the vaccine has taken mildly and well, and the same matter has made very sore arms in those previously vaccinated.

Another interesting fact has been witnessed in attacks of small-pox in individuals while under the influence of vaccination.

Instances have been seen by our physicians in which the small-pox has broken out in subjects in all stages of vaccination, and within two or three weeks after vaccination has run its course through. There has been no fixed rule in the conduct of the small-pox under these circumstances, and no conclusion *a priori* could be formed as to the violence of the attack. Most of the attacks of small-pox, while undergoing the influence of vaccine, assumed the form of varioloid, but some have been genuine and fatal small-pox.

It has been curious, too, to witness the infinite grades of those vaccinated. I have seen cases of varioloid with a single pustule—some five, ten or twenty, and so on, until the disease was lost in true small-pox. Gen. Withers had all the premonitory fever and other symptoms for four days, when a single well marked vesicle appeared on the forearm, and ran its course with all the characteristic marks of variola.

In connection with one of the points above alluded to, viz: the power of the system to resist morbid poisons when forced upon it, as is the case of vaccination, I will quote a very interesting paragraph from the Annuaire Encyclopedique, for 1864:

Until recently, it has been believed that the vaccine virus formed a characteristic vesicle. No matter what the diathesis or condition of the subject producing it might be, the virus was always the same, and could be used for propagation in others with impunity. In other words, that the vaccine virus in passing through a body could not be contaminated by any constitutional taint, and thus engender any other disease, such as syphilis, scrofula, etc.

"Such was the generally-received opinion," says the extract, "when it was ascertained at Rivalta, in Italy, in the first series of 46 children vaccinated the twenty-third May, 1861, with matter furnished by the vaccine

pustules of an infant named Chiabrera, who seemed healthy, and in a second series of 17 children vaccinated with the pus taken from one of the children of the first, there had occurred symptoms of syphilis in 37 children of the first series, and in seven of the second series; then propagation of the infection to the mothers and to the nurses. Several of these infants died; several were fortunately cured. It was Dr. Cerise who first made these facts known in France."—*Union Medicale*, t. xii.

"This caused equal surprise in France and Italy. The first impulse was to doubt. It was also the subject of very serious investigation, which left no doubt either as to the reality of this sad experience, or as to the origin of the syphilis itself. Was it then necessary to admit that two poisons so unlike could combine! On the other hand, *why had a certain number of the children, both of the first and second series, escaped the infection—why had it been more powerful in some than in others?* Several physicians supposed that the infection had been transmitted by the *blood*, which is so often mingled with the vaccine, especially when the pustules are drained to the extent which had been necessary, in order to perform such a large number of vaccinations. The discussion was long and earnest. The result a resume of all the previous forgotten or unappreciated facts of the part touching the transmission of syphilis by vaccination, or by blood. Dr. Vennois was the principal promoter of the opinion, which, in the case of vaccination, attributed to the *blood alone* the faculty of transmission. He called to mind that previously to the facts of Rivalta he had published a memoir on this subject. Still, the doubt remained, the observations were not sufficiently precise, the facts could be explained in another way. It remained to make direct experiments as to the possibility of syphilitic infection by a minute quantity of the sanguine fluid. This direct experiment was made at Florence by Dr. Pellizari on medical students who volunteered for the purpose. He proved that a few drops of blood are sufficient to transmit syphilis. Thus it has been demonstrated that, to explain the facts, it is necessary to admit the *mixture* or *composition* of the two poisons, which upset all previous notions. It is also demonstrated that the fresh sanguine particles borne on the vaccinating lancet, at the same time with the vaccine, may transmit the syphilitic infection. From these facts it results that in future we should inquire with great care into the previous history of those children from whom we select our protecting virus."

Now, gentlemen, these facts are set forth with a fullness of detail and a weight of authority that challenge belief, and if borne out by future investigations are of immense practical value. In the present stage of the question it is our duty to take the benefit of every doubt and use the utmost precaution in selecting the virus we employ, and in removing it from the arm from which it is selected without its being contaminated by a particle of blood. There is, I think, another important point to be attended to, and it is this. When we vaccinate, the lancet always draws more or less blood. Not only should the lancet be thoroughly cleansed before it is used on another subject, but the identical matter should not be used on a second subject. We ordinarily mix the dry scab in this country with water on a piece of glass, and in the process of vaccinating a child the lancet is dipped several times into the mixture, thus necessarily adding to it some particles of blood. In this state another piece of glass is ordinarily placed over the one on which a part of the virus just used remains, and is carried about in the pocket for a day or two, or more, to be remoistened and used again on others. Now, to my mind, there are two strong objections to this method. 1. The virus is thus contaminated with blood. 2. From being kept in this moist state it becomes putrid, and not only fails to produce a good vesicle in succeeding subjects, but may hazard, from its putridity, the production of spurious vaccine, followed by bad sores and even symptoms not unlike dissection wounds. I throw these hints out for further investigation.

I beg leave to add to the above an extract translated from the "Annuaire de Medecine et de Chirurgie," 1864, which will be found interesting in connection with the above at this time:

"SYPHILITIC VACCINE AND THE MEANS OF PREVENTING IT."

"The contagiousness of the blood plasma being demonstrated to his satisfaction, as to the congenital contamination of the infant by the mother, M. Laroyenne admits in like manner the contagiousness of the serum that transudes under the vaccine pustule, and mingles with the vaccine without the possibility of being distinguished. Hence a new danger outside of the blood, and the vaccinal chancre, which cannot be avoided, except by most scrupulous examination of the subject from which it is taken, and of the mother if it is not too old. The subject vaccinated itself should not be overlooked, for it may also be a source of infection, according to the same author. In a collection of children to be vaccinated, if there be one infected, a common lancet impregnated with his blood may communicate syphilis to all those vaccinated after him, and to the subject from which the vaccine is taken. (*Gaz. de Lyon, No.* 12.) All this is possible, without doubt, but is not demonstrable, and is not even probable; for if the syphilis had so many chances of being communicated by vaccination, would it not be more frequent?

Without deciding on this accessory question, M. Dupaul, in making this important subject, the principal object of his annual report on vaccine to the Academy of Medicine, has recognized the reality of the transmission of syphilis by vaccination. Doubtless a discussion will clear up the points in dispute."

"*Vaccine-bearing Heifers.*—There exists in Naples, says M. Palasciano, besides the official vaccine institute for vaccinating from arm to arm, an establishment of Dr Galbiate, where the cow-pox is propagated through heifers, in sufficient number to supply many vaccinations. When it is wished to have a child vaccinated, one of these heifers is driven to the door, the conductor cuts out a pustule entire with a pair of scissors and hands it with a pair of forceps to the physician who executes the vaccination. The whole costs one dollar. This plan is also used in the army and colleges, and vaccination from arm to arm is practiced little except among the poor."—Congrés de Lyon.

It is desirable that similar establishments should be founded in France, as it would be the surest means of escaping syphilitic vaccine.—Union Med. de la Seine Inf. p. 193.

M. Lanoix, who went to Naples to study this mode of animal vaccination, has tested it successfully and publicly at Lyons. He vaccinated a heifer of nine months old, in the iliac region and at the proper time transferred the matter to the arms of children. But we must not pass over another curious extract, which is as follows:

The milk of cows, submitted to this inoculation, would, according to Dr. Soubie, of Leghorn, have another advantage. By drinking the milk during the course of the inoculation, all the benefits of vaccination are obtained. He inserted the vaccine into the teat of a cow, and two fine pustules being developed, he made two children drink the milk. One, six months old, nourished by the bottle, took 600 grammes in two days, the fifth and sixth of the vaccine; the other, aged fourteen months, weaned, drank only half this quantity on the eighth day of the vaccine. A month after, having attempted to vaccinate them from an arm, they refused it, while the same matter succeeded perfectly in another inoculated at the same time."

These statements, to say the least, are interesting, and, coming from sources of high respectability, demand examination.

I have no data, by which to form an opinion, as to the relative frequency and nature of the foul gangrenous ulcers attendant upon vaccination in

the United States forces. In the second section of the present inquiry, we have quoted the testimony of Dr. Hamilton to show that they were, to a great extent, as in the Confederate Army, referable to the depressed and scorbutic condition of the soldiers.

Dr. Woodward, in Circular No. 6, War Department, Surgeon-General's Office, p. 127, affirms that the accidents attendant upon vaccination in the United States Army, were generally regarded by the Medical officers, as "the expression of scorbutic or other cachectic conditions of the patients, and not due to any poisonous admixture with the vaccine virus; and it was frequently observed that the same scab which had produced a number of successful vaccinations, would, in other men vaccinated at the same time, produce the ulcers referred too."

It appears, however, that some of the United States Medical officers held that a portion at least of these abnormal affections following vaccination, were due to the admixture with the syphilitic poison, as will be seen by the following extracts from an article on Spurious Vaccination, by Geo. H. Hubbard, M. D., late Brevet Lieut.-Col., and Surgeon U. S. Vols., published in the Philadelphia Medical and Surgical Reporter, February 10, 1866, p. 103.

On the last day of November, 1863, I reached Fort Smith, Arkansas, under an assignment to duty as Medical Director of the Army of the Frontier.

My attention was immediately called to several hundred men disabled in consequence of spurious vaccination, and a board of medical officers was soon after organized, by command of Major General Schofield, to investigate its origin, etc.

This Board made a detailed report, from which, from reports of other medical officers, and from personal observation, I was enabled to arrive at the following facts and conclusions.

It was definitely ascertained that the virus which caused all these cases came from persons who had been vaccinated in the rebel army, or by rebel surgeons.

This virus was used by ignorant medical officers and by self-inoculation among the men, till more than five hundred were infected.

The Board reported that—"Soon after the operation was performed, the points at which the matter was inserted commenced to itch and inflame, and by the second or third day, pustules were formed, of a yellowish color, which rapidly increased in size, and in a few days burst. In some a scab formed, but in all, open ulcers were formed by the tenth day and which furnished a thin ichorous discharge.

"At the time we examined the patients, some had well marked Hunterian chancre; some had large excavated ulcers, with edges elevated above the raw and surrounding induration; the centres, when not recently cauterized, were of a brownish hue—some, whose primary ulcers were about healed, had secondary symptoms, such as swelling and ulceration of the glands in different parts of the body; while others had pain and stiffening of the joints.

"The disease was brought to the First Arkansas Infantry by deserters from the Confederate army, and in our opinion is syphilis."

The following is from my official report to the Surgeon General:—"I have no reason to believe that in any one case did this virus produce a true vaccine pustule, or had any one of the protecting powers of vaccination.

"The ulcers all possessed, in a greater or less degree, the well established peculiarities of venereal chancre, being of a specific and progressive nature, spreading in some cases to the size of a dollar, but usually about half that size; commonly round in shape, but often irregular, and usually of the depth of the true skin.

"All had ragged, elevated, indurated, and overhanging edges, little sensitive to the touch or even to caustics; while the bottom of the ulcer, (especially under these indurated edges), was excessively sensitive.

"All discharged dark ill-conditioned pus, which in many cases caused painful excoriation of the surrounding skin, and when transferred to other parts of the body, reproduced ulcers like the original; in this way, chancres were produced on the penis in several cases.

"Cases precisely similar occurred in the Indian Brigade, stationed at Fort Gibson, in the Cherokee nation.

"Acting Assistant Surgeon Miller, on duty at that post, reported as follows:

"Besides the cases occurring among the troops, it has spread among the people to an alarming extent by self-inoculation.

"In a large proportion of the cases, consecutive symptoms have appeared; suppuration of the lympathic glands in the axilla, sore throat, exanthematous eruptions, etc.

"The cases occurring among the troops have received the ordinary treatment for syphilis, and in most cases with excellent results.

"The mischief was wide spread before the true character of the disease was recognized, so that few cases have had prompt abortive treatment, and many are, in consequence, permanently disabled.

"Nearly every case has required constitutional treatment, in addition to local treatment of the chancre.

"The milder caustic applications proving insufficient, in many cases, acid nitrate of mercury was used to clear away the indurated edges, when the ulcer usually healed rapidly under mildly stimulating applications."

"Six cases of well marked small-pox occurred in men who had suffered severely from this venereal inoculation.—Med and Surg. Reporter,—February, 19, 1866,—p. 103.

Up to the commencement of the recent civil war, the belief was almost universal that secondary syphilis could not thus be communicated by vaccination.

In the papers relating to the history and practice of vaccination, contained in the report of the General Board of Health, presented to both Houses of Parliament, by command of Her Majesty—London, 1857—Mr. Simon called for the opinion of the profession at home and abroad on the general question.

"Have you any reason to believe or suspect (a) that lymph from a true Jennerian vesicle has ever been a vehicle of syphilitic, scrofulous or other constitutional infection to the vaccinated person; (b) or that unintentional inoculation with some other disease, instead of the proposed vaccination, has occurred in the hands of a duly educated medical practioner?"

In answer to this question a writer in the British and Foreign Medico-Chirurgical Review (October, 1857, Review 3, Small-pox and Vaccination), quotes the opinion of Hebra, which may be taken as expressing in a logical and lucid manner, the belief of the majority of the medical profession at that time.

This widely-grasping question (says Hebra) requires several separate answers, because queries are made—

"1. *Whether the lymph of a vaccine vesicle may, besides its peculiar virus, contain another infectious principle—e. g., that of syphilis?*

"2. *Whether constitutional non-infecting diseases, as, for instance, scrofula, may be transmitted by the inoculation of cow-pox matter?*

"3. *Whether a vaccine vesicle possesses such characters that it may easily be distinguished from other similar vesicles, blebs or pustules?*

"(I) The transmissible infectious principles which have hitherto been recognized, by means of inoculation, are the syphilitic virus contained in the pus of a chancre; and the virus contained in the cow-pox vesicle and the small-pox pustule. The question, therefore, simply is, whether these morbid poisons have ever been mixed? Whether inoculation has ever taken place with such a mixture? And what results were obtained by such an operation? It is well known that compendious answers have, for some time past, been offered to these questions, chiefly the result of Sigmund's experiments. These answers agree in the following respects:

"Inoculation with secretions of this kind, viz: containing, as it were, several special poisons, either produced no effect at all, or only generated a chancre, by inoculating a mixture of pus from the chancre and vaccine lymph; and only cow-pox, by inoculating a combination of vaccine lymph and blenorrhagic matter. Hence, one morbid state only was produced, either cow-pox or syphilis; the latter circumstance being a proof that both poisons are not *simultaneously transmissible.* This opinion is supported by the experience of Heim, Ricord, Bousquet, Taupin, Landouzy, Friedenger, etc.

"(II). It is maintained in many quarters that the blood of persons suffering from secondary syphilis may serve as a vehicle to the infectious principle; but were even this theory found correct, it would have no prejudicial effect on the practice of vaccination, because we know from experiments made for the purpose (Heim), and from accidental inoculation, that regardless of the quality of vaccine lymph, the latter may be inoculated from syphilitic upon sound individuals; and on the other hand, from sound subjects upon such as are under the influence of systemic syphilis, without propagating syphilis along with the cow-pox.

"What has here been proved of syphilis, must, *a fortiori*, hold good as regards other constitutional morbid states, as direct inoculations with the secretions peculiar to these diseases have always yielded a negative result.

"But, although it is abundantly proved that scrofula, tubercular affections, rickets, cancer and other blood diseases cannot be transmitted by means of their own secretions, or along with the vaccine lymph, we should nevertheless, if possible, avoid vaccinating diseased persons, because experience has taught us, as regards adults and children, that the phenomena of vaccination may awake—i. e., render worse—dormant affections; and that, moreover, the cow-pox vesicle easily degenerates upon such individuals. These latter vesicles are, nevertheless, adapted for further propagation, even when they take an imperfect development, because a positive result, a regular development of the vesicle, and sufficient protection against small-pox, have been observed in cases where vaccine lymph was transferred from weakly, scrofulous and rickety subjects upon perfectly sound individuals.

"(III.) Every morbid appearance on the cutaneous envelope has its own peculiar characters, by which it may be distinguished from all other similar phenomena; the vaccine vesicle presents, in the like manner, sufficiently striking peculiarities as to form, size, number, locality and peculiarity as regards its course, to enable the observer easily to establish a distinction between the same and other vesicular, bullar or pustular eruptions."

In 1856 Mr. Simon, the medical officer of the Board of Health, addressed a circular to members of the medical profession in England and other countries, as well as to the foreign governments, inquiring, among other things, "*whether they had any reason to believe or suspect that lymph from a true Jennerian vesicle has ever been the vehicle of* syphilitic infection."

From the very large number of replies which Mr. Simon obtained, we select or condense the following:

Mr. Acton—"I unhesitatingly affirm that I have never witnessed a single case that will bear out the supposition. Although I have for a long time been convinced that infection cannot be thus introduced into the system, I have never felt myself justified in directly vaccinating healthy children from the virus of vesicles obtained from syphilitic infants."

Dr. Addison—"To both these propositions my own experience would return a negative."

Dr. Alderson—"No; but as a commissioner of the Vaccine Board, I am aware of a single instance, some years ago, of bad results following vaccination with a lancet ascertained to have been foul and accidently used in ignorance."

Dr. Balfour—"In no instance (in army vaccination during eight years) did any symptoms ever occur, or any appearance present itself, which could lead to the suspicion that the lymph had been the vehicle of syphilitic, scrofulous or other constitutional affection."

Dr. Barlow—"I have no certain proof that it is even the vesicle of such infection, though I have suspected it in the case of syphilis."

Dr. Beatty—"I do not think such a thing possible."

Dr. Bright—"I have never seen such a case."

Dr. Brinton—"No."

Sir. B. Brodie—"I have no reason to believe that vaccination was ever the means of introducing syphilis, or scrofula, or any other constitutional disease into the system."

Dr. George Burrows—"I have no reason to believe or suspect that the true vaccine lymph has ever been a vehicle of syphilitic, scrofulous or other constitutional infection to the vaccinated person; but I do fear and suspect that unintentional inoculation with some other matter than the true vaccine lymph has occurred in the hands of legally qualified medical practitioners."

Mr. George Busk—"I have never witnessed any circumstance which could lead to such a belief or suspicion."

Mr. Ceely—"Although I have heard of such events, I have never witnessed anything of the kind in my own practice of more than thirty-five years."

Sir James Clark—"I see no reason to believe the occurrence of either circumstance."

Sir Philip Crampton—"I have no reason to believe that lymph from a true Jennerian vesicle has ever been the vehicle of any other disease."

Mr. Theodore Davis—"I have never seen (and my observation extends over some thousand cases) the slightest reason to suspect that any other disease has been communicated by vaccination."

Mr. Erichsen—"I do not believe that any *constitutional* disease can be communicated through the medium of vaccine."

Dr. Arthur Farr, Dr. Robert Ferguson, Dr. Greenhill, and Mr. Thomas Hunt answered in the negative.

Sir William Jenner—"In the discharge of my duties as Physician to University College Hospital and the Hospital for Sick Children, I must have had, during the last six years, more than thirteen thousand sick adults and children under observation; and in no case have I reason to believe, or even suspect, that any constitutional taint had been conveyed from one person to another by vaccination, or that any other disease had been unintentionally inoculated."

Mr. Jones, of Chesterfield—"During the past six years, I find I have vaccinated almost 1,052 children. The result of my experience leads me positively to state that in no instance have I seen a true Jennerian vesicle—the vehicle of syphilitic, scrofulous or other disease."

Dr. P. M. Latham—"I have never met with the slightest proof of it; and the suggestion of its being possible amazes me."

Sir Charles Locock and Mr. Lord answered in a like negative manner.

Mr. Marson—"I have no reason to believe or suspect that lymph from a true Jennerian vesicle has ever been a vehicle of syphilitic, scrofulous or other constitutional infection to the vaccinated person. I answer on this point from the experience of having vaccinated upwards of 40,000 persons.

Dr. Noble, of Manchester; Dr. Robertson, of Manchester; and Dr. Stokes, of Dublin; replied decidedly in the negative.

Mr. Tompkins—"After an experience of twenty-one years as a vaccinating surgeon, and having vaccinated upwards of 40,000 children, I have never known syphilitic, scrofulous or other constitutional affection, to be communicated by the operation."

Mr. B. Travers—"My experience has not furnished me with reason to believe that the true Jennerian vesicle has ever been a vehicle of syphilitic, scrofulous or other constitutional infection."

Sir Thomas Watson—"I have never had any reason to believe or suspect that lymph from a true Jennerian vesicle has ever been a vehicle of syphilitic, scrofulous or other constitutional affection."

Dr. West—"None whatever."

Dr. C. J. B. Williams—"I do not recollect an instance in my own experience in which such untoward results have followed vaccination, but I have heard of such, and I cannot but think that they were not the necessary consequences of vaccination, but of its indiscriminate and careless performance, as in taking the virus from the diseased subjects."

Mr. Erasmus Wilson—"No. I went frequently with parents who believed an eruption under which their child suffered to have originated in vaccination, but the origin was in reality traceable to a different source."

On the other hand, the following surgeons and physicians testified to their belief that syphilis might be communicated by vaccination:

Mr. Ackerly, of Liverpool—"I have no doubt that syphilis has been communicated from a diseased to a healthy child by means of vaccination."

Dr. J. R. Bennett—"I have suspected that syphilitic disease may be communicated by vaccination, and I would not willingly sanction vaccination from an unhealthy child, however perfect might be the Jennerian vesicle whence the lymph was derived."

Dr. Fleming, of Glasgow—"I have a suspicion that I have once seen syphilitic disease communicated in this way, but it is a very difficult point to ascertain with perfect accuracy."

Mr. J. Hutchinson—"I believe that I have seen four or five instances in which local syphilitic affections were induced by vaccination, performed under ordinary circumstances, and by duly qualified men. In one or two of these the constitution suffered also, as seen by the appearance of disease in several parts, but in others it was perceptibly affected."

Dr. Laycock—"I think that this may be reasonably believed or suspected, and think a duly educated practitioner may be a negligent, careless or thoughtless practitioner, and may inoculate unintentionally with some other disease. Our knowledge of morbid poisons is too imperfect to speak positively as to what may happen or what may be suspected, reasonably or not."

Dr. Lever—"I must say *yes*. I have known syphilis communicated to a child by the hands of a supposed but legally educated medical practitioner."

Mr. Martin, of Bristol—"I believe it is sometimes the vehicle of communicating the syphilitic taints to children previously perfectly free from it. * * * I have on many occasions, been called to cases of eruption markedly syphilitic, occurring after vaccination, and in which I have failed to detect the slightest taint in either parent or in the other children of the same marriage."

Mr. Morley, of Sunderland—"I have had one case where the lymph, sent me by a medical friend who is a public vaccinator, did produce a syphilitic taint."

Mr. Startin—"This is a difficult question to answer satisfactorily, as the reply must rest upon what is regarded as a 'true Jennerian vesicle,' as this vesicle, in a subject suffering under constitutional or acquired syphilis, or from purigo, or even scabbies,

might be still a 'true Jennerian vesicle,' though not a pure one, and these maladies I have many times seen transferred from such a vesicle. I have also seen the same maladies inoculated by public vaccinators from unintentional vaccination"

Dr. Whitehead, of Manchester—"I have seen several instances of the transference of the syphilitic taint through the medium of vaccination, the lymph having been taken from a true Jennerian vesicle, or presumed to be so at least in a tainted infant."

The opinions of the Continental physicians on this subject were equally divided.

Mr. Simon's own opinion at the time he wrote (1857) was that in the cases then on record, in which persons pretending to vaccinate did really effect a syphilitic inoculation, it is almost certain that the matter of syphilis was used by the vaccinator instead of vaccine lymph.

Since the publication of the Rivalta outbreak, however, Mr. Simon appears to have modified his opinion, and is disposed to believe that cases of reported vaccine-syphilitic inoculation have arisen from the admixture of syphilitic matter with the vaccine in such manner as might readily be comprehended to occur amongst careless and dirty people.

We shall examine these doctrines and conclude these *Researches on Spurious Vaccination*, with an examination of the following questions:

1. *The possibility of communicating tuberculosis and cancer by inoculation.*
2. *The possibility of communicating secondary or constitutional syphilis by inoculation.*
3. *The possibility of communicating the poison of syphilis through the medium of vaccine virus.*

INOCULABILITY OF TUBERCLE.

1. True tubercle is organized; that is, it is composed of living cells, and during its growth it resembles, to a certain extent, fresh granulations. These soft fragile cells and nuclei, resembling the gland cells of the lymphatic glands, are to be regarded as the characteristic living element of tubercle. According to this view, tubercle resembles malignant growths.

M. Villemin's researches appear to have settled the question of the inoculability of tubercle. This observer affirms that he had succeeded in reproducing tubercle by inoculation, again and again, in rabbits, not only when taken from the human subject, but also when derived from the cow; and further, that the tubercular matter thus produced in one rabbit, could be in like manner transmitted to another. (Gazette Hebdomadaire, 1866.)

Dr. Lebert, professor at Breslau, has succeeded in introducing tubercle into the system by subcutaneous injection, and thus confirmed M. Villemin's experiments. Dr. Lebert's experiments were made with Guinea pigs and rabbits, and both grey and yellow matter were employed, as well as liquid from the cavity; the nape of the neck was the spot chosen for injection, and the amount introduced varied from fifty centigrammes to a gramme, diluted and triturated with distilled water. The result of his experiments was the finding of tubercles not only in the lungs, but in other organs, as the liver, spleen, plurae and pericardium. In some experiments, the tubercles were found in large portions of the lymphatic system. Microscopic examination revealed the identity of the tubercles thus formed in animals by inoculation, with those of man.

Tubercle still further resembles malignant growths, in that the original growth causes the formation of new tubercles in its neighborhood and thus gradually infects large tracts of living and previously healthy tissue. It is possible in many cases, by carefully comparing the symptoms during life, with the results of post-mortem examination, to trace the gradual propagation, of tubercle from a well defined centre.

The question of the contagious or non-contagious nature of tubercles is one of vast importance, as will be shown by the following statistics and facts:

MORTALITY OCCASIONED IN NEW ORLEANS, LOUISIANA, AND THE VALLEY OF THE MISSISSIPPI BY PHTHISIS (TUBERCULOSIS, PHTHISIS-PULMONALIS, CONSUMPTION).

During the first six months of 1882 phthisis-pulmonalis caused the following mortality:

MONTH.	White.	Colored.	Total.	MONTH.	White.	Colored.	Total.
January	38	34	72	April	34	29	63
February	53	35	88	May	45	28	73
March	50	33	73	June	44	23	67
				Total	254	182	436

During the last six months of 1882 phthisis-pulmonalis caused the following mortality:

MONTH.	White.	Colored.	Total.	MONTH.	White.	Colored.	Total.
July	42	24	66	October	44	24	[illegible]
August	37	34	71	November	43	29	72
September	32	23	55	December	55	34	89
				Total	253	168	421
Total, twelve months					507	350	857

During the first six months of 1882 tabes-mesenterica caused 97 deaths—whites, 58; colored, 39; syphilis, 17 deaths—7 whites and 10 colored. During the last six months of 1882 tabes-mesenterica caused 63 deaths—whites, 55; colored, 18; syphilis, 17 deaths—whites, 10; colored, 7. Leprosy occasioned two deaths, amongst only whites, during 1882.

It will be observed from a critical examination of the mortuary records of 1882, that phthisis-pulmonalis heads the list of diseases in its fatal effects, occasioning a total mortality of 857—whites, 507; colored, 355. Tabes-mesenterica caused deaths: whites, 113; colored, 57; total, 170.

These two diseases, phthisis-pulmonalis and tabes-mesenterica, caused 1,027 deaths, or more than one sixth of the total mortality of 1882.

Relative to population, phthisis was most fatal in the colored race.

During a period of thirty-four years, 1846-1880, 10,950 cases of phthisis-pulmonalis were treated in the Charity Hospital of New Orleans, with a mortality of 5,600: 51.2 per cent.

During thirty-six years, 1846-1882, phthisis-pulmonalis occasioned in New Orleans 25,828 deaths; during the same period tabes-mesenterica occasioned, 4,950 deaths. Total deaths by these two diseases during the period specified, 30,778.

During the same period, 1844-1882, yellow-fever occasioned 28,745 deaths.

These statistics show that phthisis-pulmonalis demands the first and highest consideration at the hands of the sanitarians and physicians of New Orleans.

It is also worthy of note that the mortality occasioned by phthisis-pulmonalis is quite uniform throughout the great Valley of the Mississippi, with its 20,000,000 of inhabitants; and if the mortality be placed annually at 500 deaths in every 200,000 inhabitants (an estimate below the real mortality from phthisis), then not less than 50,000 inhabitants of the Mississippi Valley annually fall victims to phthisis-pulmonalis.

Yellow-fever has only at long intervals extended its ravages beyond the cities located near the Gulf of Mexico, and the most extravagant and wild calculation cannot claim a mortality in 1878, when it is supposed to have been most widely diffused through the Valley, of over 20,000 victims.

After careful examination of the statistics of 1878, I am inclined to place the mortality from yellow fever at not more than 15,000.

Phthisis pulmonalis visits annually every hamlet, village, town or city of the great Valley, and its causes and prevention should be of daily consideration ; and State and national legislation should not be invoked alone for the prevention of yellew fever, small-pox and cholera ; neither should the truth be obscured, and national and State legislation perverted by a constant appeal to popular prejudice, ignorance and fear with reference to yellow fever.

The relations of phthisis to moisture and to faulty construction of dwellings and to the low and badly drained localities of New Orleans, were considered in the Annual Report of the Board of Health of the State of Louisiana for 1881 ; see pp. 188—190.

It is however of importance that we should briefly consider the conditions which give rise to phthisis, and also examine the important question as to the contagious or non-contagious nature of tuberculosis.

ÆTIOLOGY OF PHTHISIS.

The conditions which give rise to phthisis are varied and diverse, but may be arranged into general and local causes ; in the former, the constitution of the individual and the functions of nutrition and assimilation appear to be first involved ; in the latter the lungs are the primary seat of the disease, and changes in their epithelia and parenchyma lead to products of a retrograde kind, through which the lymphatic and vascular systems and the constitution generally become affected. The general have been called constitutional and the local inflammatory.

Dr. C. Theodore Williams and other systematic medical writers, have assigned the following as the most important causes of phthisis ?

1. Family predisposition.

The influence of heredity as a cause of phthisis cannot be doubted.

2. Local infection.— Chronic inflammatory affections of organs and textures leading to the formation of caseous centres.

3. Acute febrile diseases.—Continued fevers, measles and scarlatina, act partly by exhausting the system, and partly by bequeathing to the individual the legacy of caseous matter, either in the lungs or glands, which form the centres of subsequent tuberculisation.

Syphilis.—Syphilis by its debilitating influence predisposes to phthisis ; but it also appears to act as a cause capable of developing a limited consolidation, and a form of a laryngeal phthisis, characterized by ulcers in the larynx and pharynx.

5. *Debilitating conditions.*—Miscarriages, unfavorable confinements, overlactation, insufficient food and alcoholism are recognized causes of phthisis.

6. *Bad Ventilation.*—Consumption is more rife among persons of indoor occupations than among those employed out of doors. Of nearly 6000 cases of phthisis admitted into the Brompton Hospital during ten years, two-thirds had indoor occupations. Among them milliners, seamstresses and tailors furnish the largest quota, who all live in close rooms to which they are almost entirely confined. Phthisis frequently attacks printers, compositors, tailors and tradesmen who live in hot gas-lit shops, and often sleep in miserably ventilated bed-rooms.

7. *Climatic Influence.*—A moist atmosphere is more favorable to the development of consumption than a dry one. Dr. Gurlbert has shown that a combination of heat and moisture, as exemplified in the litoral of Peru, in the West Indies, etc., produces an acute form of consumption, largely prevalent in these districts, attacking the abdominal organ in addition to the lungs.

8. *Dampness of Soil*—The researches of Dr. Buchanan have demonstrated that the death rate from phthisis in the Districts of Surrey, Kent and Sussex depend, to a great extent, on the geological formation of the soil; for while in the light and sandy strata deaths from phthisis are rare, in the heavy impentrable ones, in which clay predominates, the mortality from this cause is high.

The conclusion that wetness of soil is a cause of phthisis to those living on it, has been confirmed by the Registrar General of Scotland, and Dr. Bowditch, of the United States; the latter testifying that the law holds good, not only as regards villages and towns, but even as regards individual houses—the houses on clay becoming the foci of consumption, whilst others, but slightly removed from them, but on a dry soil, wholly escape.

The pine regions, with their dry, sandy, porous soil, of Louisiana, Alabama, Florida, Georgia and Mississippi are noted for their freedom from phthisis, and are famed as health resorts for those suffering with this disease.

The difference in the relative salubrity with reference to phthisis between New Orleans and the neighboring pine hills is due, not to variations of temperature, but to the absence of moisture in the atmosphere and of water in the soil of the latter.

9. *Inoculation*—From the time of Laennec until the present, experiments have been carried on by numerous observers to ascertain whether tubercle is, or is not inoculable; and the results of these experiments prove that in guinea-pigs and rabbits tubercle can be produced artificially by the insertion under the skin, not only of tubercle, but of various other materials, such as pus, putrid muscle and diseased liver taken from non-tuberculous subjects. There was nothing specific in the results of the inoculations, for the materials most efficient in producing artificial tubercle were taken from low pneumonia, pyæmic abscess, etc.; while human tubercle, phthisical sputa, pus and putrid muscle were less successful. It was found by Dr. Burden Sanderson that tuberculosis might be induced in the guinea-pig by the insertion of a cotton thread under the skin, but if the seton was steeped in carbolic acid, no tubercle was produced. To ascertain the results of mechanical injury without exposure to air, the scapulæ of guinea-pigs were fractured subcutaneously. No tuberculosis resulted. It is evident, from these experiments, that tubercle is not so effective for infective purposes as many other materials, and especially those of a septic nature, as pyæmic pus and putrid muscle. These facts warrant the conclusion that tuberculosis is closely associated with pyæmia, and among animals the difference between these two diseases would appear to be one merely of degree.

10. *Infection*—The idea of infection being the cause of phthisis has been received and extended in England and Germany. The evidence of the Brompton Hospital negatives the idea of a contagion such as is present in small-pox or scarlet fever; for it has been demonstrated that the percentage of acquired pthtisis occurring amongst the resident staff of the institution is less than that of most general hospitals.

Virchow and most English physicians strongly maintain that phthisis may be communicated from husband to wife, and Dr. Herman Weber has lately indicated, by some striking cases, the danger of pregnancy to the wife of a consumptive.

Cohnheim, who appears to have confirmed by his own experiments the ctrine of specific infection, holds, in opposition to the above views, that e test of tubercle is its inoculability, and prefers this to any structural st. He considers that tubercular particles are conveyed by means of ganisms to the lungs, thus affecting the pleura and bronchial glands, ter the larger bronchi. The infection of the intestinal canal arises, ae-rding to Cohnheim, from swallowing the sputum.*

Dr. Koch, an eminent German mycologist, distinguished for his classical rk on anthrax and infectious surgical diseases, has advanced the view at phthisis is of parasitic origin, and claims that he has proven by direct periments on animals that a certain bacillus, which he calls *bacillus tuber-losis*, is the cause of this disease.

The recent appointment of Dr. Koch as Imperial Councillor and Chief of e Laboratories of the National Board of Health of the German Empire, s given great weight to his statements, and his conclusions as to the iology of phthisis have been indorsed by some distinguished microscop-s and physicians in Germany, England and America. The news of this eat discovery of Koch have been spread by the newspapers throughout civilized nations.

Recently the low organism which is alleged to be the cause of general berculosis and phthisis was exhibited to the pathologists and physicians Philadelphia by Professor Whittaker, of Cleveland, O., by invitation of e College of Physicians.

Dr. H. D. Formad, lecturer on experimental pathology and demonstrator morbid anatomy in the University of Pennsylvania, has also publicly monstrated, before the Philadelphia County Medical Society, the exist-ce of this organism in the sputum of patients suffering with this disease the Philadelphia Hospital.

The discovery of Koch and his theory, which corresponds with the pre-iling opinion that there must be a specific poison of some kind character-ic of phthisis transmissible from person to person and from animal to imal, and from animal to man, through food, water, air and cohabitation, llowed to its logical conclusion leads to most important results.

It is said that in Germany, by imperial order, in military hospitals thisical patients are separated from other cases, as carefully as small-x patients; and even in this country the people begin to regard consump-n as eminently contagious.

The adoption of the views of the contagionists will, without doubt, lead much mental and physical suffering. The wife will look with suspicion, hot with abhorrence, upon her sick husband; the hale and hearty husband ll abandon his feeble wife; and the sick child will be isolated and pass e remaining days of suffering in solitude.

During the experience of more than twenty-five years spent mainly in e sick-room and in the wards of civil and military hospitals, the opinion s grown into a strong conviction that tuberculosis (consumption) phthisis lmonalis is *not contagious* in the same manner as small-pox, measles or arlatina.

The following conclusions and propositions recently enunciated by H. Formad, M. D., of the Medical Department of the University of Penn-lvania, are worthy of consideration, in connection with the foregoing ts:

(a) The predisposition to tuberculosis in some men and animals, the so lled scrofulous habit, lies in the anatomy of the connective tissue of the

*"A Dictionary of Medicine, Including General Pathology, General Therapeutics, Hygiene, and the ases Peculiar to Women and Children by Various Writers." Edited by Richard Quain, M. D., F. R. S. don: Longmans, Green & Co., 1882. Pp. 1166-1168.

individual, the peculiarity being a narrowness of the lymphatics, and their entire obliteration by cellular elements.

(b) Only beings with such anomalous structure of connective tissue can have primary tuberculosis, and such animals invariably do become tuberculous from any injury resulting in inflammation, although it may remain local and harmless.

(c) Scrofulous beings can have no other than a tuberculous inflammation, although it may remain local and harmless.

(d) Non-scrofulous men or animals may acquire the predisposition to tuberculosis through mal-nutrition and confinement, the latter bringing on the above mentioned peculiarities in the connective tissue.

(e) No external etiological influences are necessary to cause tubercular disease other than those which ordinarily produce inflammation, and even scrofulous beings will not become tuberculous unless local inflammation is set up.

No inflammation, no tuberculosis.

(f) Non-scrofulous animals, so far as can be established now, may acquire tubercular disease through injuries of serous membranes, viz: peritoneum, pleura, etc. And even here, without any special virus whatsoever, clinical observations on the post mortem table show similar conditions, and prove the same in men.

(g) The *bacilli*, which is the merit of Koch to have first proved to infest tissues affected by tubercular disease, are not necessary for its causation, even if a special organism exist and be really possessed of such property.

The presence of bacilli is secondary, and appears to *condition* the complete destruction of the tissue already diseased and infected by them, and this destruction is in direct proportion to the quantity of the organism.

The tuberculous tissue seems to serve merely as a nidus for the growth of the bacillus.

(h) An analysis of Koch's experiment shows that he has not proved the parasitic nature of phthisis, or that there exists a special bacillus tuberculosis; so that the infectiousness of tubercular disease is still *sub judice.*

(i) From the result of microscopical and post mortem observations, and clinical investigations, the conclusion seems to be justified that *phthisis is not a specific infectious disease;* but that the individuals suffering from tubercular disease are specific themselves, originally, and form a specific variety of mankind, the *scrofulous.*

11. *Local Causes*—The local causes of phthisis are those which injuriously affect the bronchi and air passages, causing large epithelial proliferations and various inflammatory lesions, followed by thickening and induration of the alveolar walls, and in time caseation or fibrosis. Bronchitis and pneumonia are fruitful sources of phthisis.

12. *Trades and Occupations Giving Rise to a Dusty or Gritty Atmosphere.*—The constant inhalation of particles of flint, iron, coal, hard clay, and even of cotton, flax and straw, as is the case in certain trades—such as stone-masons, fork and needle grinders, colliers, potters, cotton carders, chaff cutters, and others—has been shown by Dr. Greenhow to induce phthisis. The various irritating particles have been detected, microscopically and chemically, in the lungs, where they appear to cause great irritation, followed by thickening of the bronchi and subsequent induration of the lung tissue, with increase of pigment. Intermingled in the consolidations are found gray and yellow tubercle, and also extensive cavities, proving the identity of this disease with phthisis. (A Dictionary of Medicine, etc., edited by Richard Quain, M. D.; London, 1882; p. 1168.)

It is not my design to discuss, at this time, the cause and mode of origin f tubercle, or its relations to inflammation, and to defective nutrition; my esign has been simply to show that there are facts and experiments prov- ng the possibility of transmitting the disease from one animal to another y inoculation. And whilst we are unacquainted with a single fact which llustrates in any manner the relations of vaccination to tuberculosis, at he same time it must be admitted that we need farther experiments and ight upon this subject; and we know just enough to create a prejudice gainst the indiscriminate use of vaccine matter from scrofulous and tuber- ulous subjects.

OSSIBILITY OF TRANSMITTING SCROFULA BY VACCINATION.

Dr. Edward Ballard, in his valuable Prize Essay on Vaccination, pro- osed the following question:

"*Is there any reason to believe that scrofulous affections or cutaneous diseases are ever com- unicated by means of vaccination?*"

"In replying to this question we may freely admit that sometimes scrofulous manifesta- ions do succeed the vaccine disease, and, moreover, that it is not a rare event for cer- in eruptions on the skin, such as eczema or the 'crusta lactea' of authors, to appear hortly after vaccination. But it does not follow from this that the lymph which has een over it, as mothers are very apt to fancy, the cause of the attack, or that it has been erived from an unhealthy child. The quality of vaccine virus as we shall see presently, not regulated by any special healthiness or unhealthiness of the child who furnishes , in the sense that it partakes in any way of that child's peculiar constitution. It is the me from a scrofulous or ricketty infant as from a robust one; it is vaccine virus weak- ned and deteriorated somewhat, perhaps in its energy, but nothing more. Besides, if it ere contaminated—if, it did partake of the constitution of the vaccinifer—what then? s scrofula a disease capable of being communicated by inoculation of a secretion from ne subject to another? or the skin diseases, so commonly laid to the charge of bad lymph, apable of a similar mode of transmission? Nothing of the sort. Neither of them are ontageous, neither of them inoculable—although the very secretions and material itself e used to make the attempt with. These maladies arise in a very different manner. low scrofulous affections generally arise I have already had occasion to point out; and I ave only to add that skin affections, such as eczema, strophalus, etc., are very common iseases in infants constitutionally predisposed to them, and especially during dentition, r when children are supplied with food of an improper character, or when cleanliness is eglected. Glandular swellings, also, about the neck are often associated, as a result of ne local irritation, with eczema of the head and face, if at all extensive. And these hings happen just the same in unvaccinated children as in vaccinated children, and was bserved just as often in the days when vaccination was unknown as they are now; and hey originated then from just the same causes as they originate in now. The most that an be said about their relation to vaccination is that the disturbance of the system in ne vaccine disease may sometimes, like any other constitutional disturbance, or like mall-pox itself, promote or arrest in the manifestation of a scrofulous taint if pre-exis. ut, or may arrest other causes which alone have been insufficient for the appearance of n eruption on the skin. I cannot express the relation borne by vaccination to such utbreaks of cutaneous disease better than it has been statedby Mr. Paget:

"When eczema, impetigo, etc., occur, as in any sense, a consequence of vaccination, the xplanation is to be found in the fact that vaccination produces a certain amount of fever- hness, and is followed by a few days loss of strength—states which, though they are uite insignificant in moderately healthy children, are favorable to the evolution of any nstitutional disease or blood disease to which a sickly child may be liable. In children nd adults alike it is certain that a tendency to the external manifestations of eczema nd the other diseases above named may exist for many weeks or months, and yet not ike effect till some accident disturbs the health, and wakens, as one may say, the form f retention or repression of the morbid tendency in the blood. There is, indeed, scarcely blood-disease of which evolution may not thus be determined or hastened by an acci- ental injury, or by casual loss of health. When, therefore, eczema, or any such disease, appears after vaccination that the one may with any reason be regarded as the conse- uence of the other, the vaccination may be considered to have done no more than any ccidental injury would have done. Indeed, even among ignorant persons, the blame of hese diseases is not nearly so often laid on vaccination as it is on accidental blows, falls, ights, colds, surfeits, and other such things. Perhaps the most common expression of ll is that a child cannot even get so much as the scratch of a pin but what it brings out

an eruption, or 'is followed by an abscess.' Now vaccination may do, though I believe it very rarely does, what these small accidents may do, namely, by disturbing the general health it may give an opportunity for the external manifestation and complete evolution of some constitutinal affection, which, but for it, might have remained rather longer latant."

But so deeply rooted is the belief in some minds that, because these maladies sometimes succeed the vaccine disease, therefore they are caussd by it directly and solely; that rather than run a remote risk of what mostly is by no means a serious ailment, of what may occur in a predisposed child even if vaccination be not performed, mothers will prefer to accept for their offspring the chances of small-pox and all its dangers."—Vaccination: Edward Ballard, pp. 272-275.

INOCULABILITY OF CANCER.

Dr. George Budd, of London, in his valuable work on diseases of the liver, has recorded a large number of facts to show, not only that cancer may be disseminated by *inoculation*, or by the mere contact of a sound part with a part affected with cancer, without any dircct vascular connection between them; and by cancerous matter conveyed by lymphatics and veins to other parts of the body; but that cancer may even be propagated by inoculation, or by injection of cancerous matter into veins from one animal to another.

The facts recorded by Dr. Budd illustrate in the clearest manner the first two modes of the dissemination of cancer, in the human being; and to support the third proposition he cites the following experiments:

Professor Langenbeck injected into the veins of a dog some pulp taken from a cancer which had just been removed from a living body. At the end of some weeks the dog began to waste rapidly. It was then killed, and several cancerous tumors were found in its lungs.

Another instance to the same effect, taken from a German periodical, is related in the Provincial Medical Journal for September 23, 1843. Some cells were collected from a black liquid in the orbit of a mare affected with melanosis, and were inoculated into the conjunctiva and lachrymal gland of an old horse. These merely caused a black spot on the conjunctiva, which extended very slowly; but about the sixteenth week after inoculation, melanosis of the lachrymal gland was very decided; it had invaded the whole organ, and pushed the globe of the eye forward. Some of the melanotic matter, taken from the same mare, was injected into the veins of the neck of a dog, who died suddenly whilst hunting, three weeks after the operation. There was found in the left lung a melanotic tumor, which was ruptured, and which contained a brown, coffee-colored fluid, abounding in cells.

So many instances have occurred of cancer of the penis in men whose wives had cancer of the womb, that many physicians have been led to believe that the disease in these instances was propagated by contagion. (On the disease of the liver by George Budd, M.D., Third Edition, London, 1857, chapter 4., pp. 388-416).

It would in like manner, be foreign to our purpose to enter into any speculation as to the cause of cancer, or into an examination of the qnestion, whether the germ of the disease be a true parasite, introduced from without; or whether cancer is generated within the body, or of the materials of the body, under the influences of certain agencies.

We will have accomplished our purpose in recording these facts, if we succeed in directing the attention of the profession in this country, to the necessity of greater attention to the condition of the subjects selected for the propagation of the vaccine disease.

II. CONTAGIOUS NATURE OF CONSTITUTIONAL SYPHILIS.

We proceed now to the consideration of the second and more important question, which relates to the propagation of one of the most destructive poisons in its action upon the human race.

The formal and persevering denial by eminent surgeons, that secondary syphilitic disease could be communicated by contact, and the adoption of this theory by a large and influential school, has inflicted much domestic misery and led to most unwarrantable and destructive carelessness in the process of vaccination.

The question of the communication, by contact and inoculation of secondary syphilis, is of vast importance in its bearing upon the human race, and should not be settled dogmatically—in fact it is not in any manner a question of belief, but of facts.

As early as 1498, Gaspard Torella affirmed that he had often seen the unweaned child infected by the sore breasts of its mother, and then bestow upon its nurse, who fondled and kissed it, the same unfortunate endowments.

Many of the older writers appear to have entertained no doubt with reference to the possibility of communicating constitutional syphilis. The following testimony is from William Clowes, who wrote more than two centuries and a half ago:

I have also knowne divers persons infected, who have had in all other parts of the bodie manifest signes thereof, as dolors, tumors, ulcers, and venemous pustules, etc. And yet in the parts aforesaid, no paine, or any signes thereof; so that their opinion is not to be observed, which affirme, that this disease is ingendred onely, by the company of uncleane persons; for I have knowne not many years past, three good and honest midwives infected with this disease, called *Lues Venerea*, by bringing abed three infected women, of three infected children, which infection was chiefly fixed upon the midwives, fingers and hands, etc. What should I speake of young sucking children, whereof divers have been grievously vexed with this disease, and some of them a moneth, two, three or foure moneths old, and some of them a year old, some foure or five yeares old, and some of them sixe or seaven yeares old, amongst which sort, I thought it good here to note a certaine wench, the daughter of one *Sare* of twelve yeares of age, the which I cured, in the yeare oure Lord 1567, who was greatly infected with this sicknesse in many parts of her body, having thereon painfull nodes or hard swellings and ulcers, with corruption of the bones, and yet no signe in the most suspected parts, neither by reason of debilitie was able to have committed any such act, but it is not to be doubted, but that she received the infection, either from the parents, the which cure of some is supposed uncertaine, whether children bagotten by infected parent may bee cured or not; or else she was infected, as children begotten by infected parents, may bee cured or not, or else she was infected, as divers are, by sucking the corrupt milke of some infected nurse, of whom I have cured many, for such milke is engendred of infected bloud, and I may not here in conscience overpasse, to forwarne the geod Reader, of such lewde and filthie nurses; for that in the yeare 1583, it chanced that three young children, all borne in this citie of London, all of one parish, or very neere together, and being of honest parentage, were put to nurse, the one in the countrie, and the other two were nursed in the citie of London; but within lesse than halfe a yeare, they were all three brought home to their parents and friends, grievously infected with this great and odious disease, by their wicked and filthy nurses; Then their parents seeing them thus miserably spoiled and consumed by extreme paines, and great breaking out upon their bodies, and being so young, sick and weake, unpossible to be weaned, were forced, as nature doth binde, to seeke by all meanes possible to preserve these poore silly infants, which else had died most pitifully. To be briefe, ere ever those children could be cured, they had infected five sundry good and honest nurses; I cured one of the children, and the nurse which gave it sucke, the other two children and their nurses were also cured by others, but one of the children lived not long after, as I was given to understand. Also, friendly reader, I read of late in a certaine history, written by *Ambrose Pare*, in his 2. book, intreating of the causes of *Lues Venerea* which history indeed is worthy the rehearsall: "An honest citizen saith he, granted his most chaste wife, that she should nurse the childe which she was lately delivered of, if she would keepe a nurse to be partaker of the travell and paines; the nurse that she tooke by chance, was infected with *Lues Venerea*, therefore she did presently infect the foster childe, and he the mother, and she the husband, and he two children which he had daily at his table and bed, not knowing of that poison which he did nourish in his own body and

intrals. But when the mother considered and perceived, that her childe did not prosper or profit by the nourishment, but continually cried and wexed wayward, desired me to tell her the cause of that disease, neither was it any hard matter to doe, for his body was full of the small-pocks, whelkes, and venerous pustules: and the brests of the nurses and mother being looked on, were eroded with virulent ulcers; and the body of the father and his two sonnes, the one about three yeares, and the other foure yeares of age, were infected with the like pustules and swellings that the childe had; therefore I shewed them that they were infected with the *Lues Verenea*, whose beginnings, and as it were provocations, were spred abroad by the nurse that was hired, by her maligne infection. I cured them all, and by the helpe of God, brought them to health, except the sucking childe, which died in the cure; and the nurse being called before the magistrates, was punished in prison and whipped closely, and had been publikely whipped through all the streets of the citie, if it had not been for the honors of that unfortunate family." Thus we see children infected by filthy nurses, and sometimes nurses be infected by giving sucke to such infected children. And now to returne to my former purpose, the disease, as saith *Nicholas Masa*, whose councell and direction in the cure of this disease I have greatly observed. The disease because it hath a flowing matter, being once entered into any part of the body, proceedeth on from part to part, never resting until it hath corrupted the liver, with the ill disposition of this infection especially. When it toucheth any such part, as hath in it an apt disposition to admit such infection, as when the action or force of the agent is wrought and imprinted in the patient, fitly affected to receive the same forme, and so it disperseth itselfe through the whole bodie: likewise this sicknesse is many times bred in the mouth, by eating and drinking with infected persons, and sometimes onely by breathings; and *Almanor* a learned physition setteth downe for truth, that this disease may be taken by kissing, and sometimes by lying in the bed with them, or by lying in the sheets after them; also it is said to come by sitting on the same stoole of easement, where some infected person frequenteth, and sometimes such as have been cured of this disease, fall into it againe by wearing their old infected apparell: all which causes of this disease I rather set downe, for that I would thereby admonish as many, as shall read this treatise. to be carefull of themselves in this behalfe, and to shun as much as may be, all such as may be, all such occasions.—A Profitable and Necessarie Booke of Observations for all those that are burned with the flame of gun-powder, etc, By William Clowes, London; M. Dawson, 1637. pp. 151-2-3.

Gideon Harvey, in his "Venus Unmasked," published two hundred years ago, expresses similar views:

4. *Probl.* How many various ways the pox exert its contagion? No external part is impowered to transmit its infection immediately, except where it's suscepted; so we observe the venereal parts to be infectory immediately upon the susception of virulency, but not through kissing, sucking of the breast, by sweat, or through any other parts but themselves. So the mouth that's infectod by kissing, or sucking a thorow pockified whore's tet, is capable of immediately infecting another's lips by kissing,-or any other part by sucking it, because the pocky miasms are neer; but not by copulation, or sweat, etc., because the contagion cannot be crept so far. Experience verifies this dictate. Is it not an ordinary trick of wenchers (as *Musa* relates) to suck whore's tongues, and tets of their breast and yet those whom they know have been pockified many years about their lower parts, and for that reason though their appetites are furious, yet dare not be dabbling, but the other they reiterate a thousand times over without the least hazzard? An instance for the other part of the dictate, which I had from my first master in physick, that wonder of physicians, Prof. *Job. Antonid, vander Linden, p. m.*, the profoundest commentator on *Hippocrates* and *Celsus* that ever any age presented, whom I heard that most famous *Professor Regius Guido Patin* intitulate the *Dutch Hippocrates*. He during his luculent practice at *Amsterdam*, had a merchant's prentice in cure of an genorrhe, and a blistered, or cankered like mouth; both symptoms he confest to have started upon him at the same time. The excellent Professor being curious and admiring at the rarity of such distant symptoms emerging at once, extorted an ingenuous confession from his patient, upon pretence that it would facilitate and abreviate the cure: the other without any longer suspense impudently told him his tongue was as unfortunate as his tayl; a sort of diabolick satyrism, outvying *Aretius flagello de Principi* and very like a *Dutch* invention. What insued? this bastard at a *Besoeck* (an invitation that's usually made to young folks, preliminary to all weddings) accosted himself to two pretty damsels, and being planted between them, oft flanckt to the right, and in a kiss pledged his right hand man, and so to the left, and performed the like duty there. But the tragick event may imprint a dread upon all young women. A short time after their lips felt hot, inflamed, grew sore and ulcered, one named it the thrush, another a sore mouth; vulgar applications rather promoted than checkt the evil, wherein they persisted so long that accessory accidents, as sordid ulcers of the palat and tonsils, nocturnal pains, etc., moved a jealousie of the fowl disease. Here you may remark, how innocently the poor lasses pessundated their fortunes. The reflexion of this relation upon the latter part of the dictate I commit to your own thoughts.

2. A wench or monsieur by that time they are thorow pockified, are infectious in any part where ever the pox bursts out, because the virulent seminaries are propagated quite through the body, which exhaling at the places affected, transport the contagion. What the *thorow-pox* is expect below ; so that when the malady is tumefyed to so high a flood, its time for nurses, physicians, and all visitors to stand off; upon such occasions a person may be infected by drinking out of the same vessel (provided the spittle adhering be warm still), as we have heard of many ; (*Leonardus Botallus* adduceth an observation of a patient of his, of a chast and religious converse, who was stigmatized by a peculiar pledging of his familiar, then under a sore affliction of *thorow-pox*. His lips inflamed, afterwards ulcered, his jaw bone grew carious, and was miserably rackt with nocturnal arthritick, pains). By trying of a warm pocky glove ; by succeeding a virulent patient on a close stool ; by shifting of him, or making his bed whilst the sheets continue warm ; as *Nicol. Massa's* friend and patient, who incurred this evil, by touching the sheets, one lay in, that was lame of a *Neapolitan* ulcer in his legg ; and that old woman in *Horst's observ.* aged fifty-six, tending a pocky fellow in his lying in, was seized of the same disease in as furious a degree as her master : and by kissing, witness *Faventinus*, who knew a young man, that contracted this evil by oft kissing a fowl slut. The initial symptoms appeared about his mouth ; his privities, which otherwise might have bin suspected, appearing free from all contagion. To this I'l parallel another ; one Mrs. &c., then a pocky inhabitant of the *Hague*, having run the gantlop of several cures, hydrotick and mercurial, at last proved with child ; her reckoning being expired, she was brought to bed of a monster, in all particulars resembling a living child ; saving the skin, which was abominally ciphered with spots and botches, This object of *mercy upon us* was committed to the care of a nurse, the infant aspiring to higher things, had bade world adieu. But the unhappy nurse had cause to curse her late foster child, her breasts and head ulcered, a *caries* got into the *cranium*, the pox took possession of the poor woman's carcase, for want of a purse to release her. The pocky original Mistris, &c., was proclaimed barbarous by a whole jury of matrons, for refusing relief to the disastered woman. In all these transactions the *Pater Familias* stood it out vigorously with a fresh countenance, no sign contradicting his pancratick health. Just such another mischance *Musa Brasavous* tells us, befell a nurse that suckled one Sr. *Orobo's* child, thorowly conspurcated with the pox. The observation hereupon infers this a *thorow-pox*, and consequently must prove infectious in all parts of the body. Physicans in this case run a great risk in feeling pulses and approaching such patients in their sweats.—Venus Unmasked, or a More Exact Discovery of the Venereal Evil, or French Disease : By Gideon Harvey, London ; T. Grismond, 1665, pp. 94-5-6-7-8-9.

In like manner Daniel Turner in his work on syphilis, published in 1717, maintains the contagious nature of constitutional syphilis :

And this I intend shall suffice for its *chronology* or time, the *top ology* or place, and the *histriography* or account of the disease in general; which, with some other writers thereon, we shall now define, *a venomous or contagious distemper, for the most contracted by impure coition, at least some connect of the genitels of both sexes, or some other lewed and filthy dalliance between each other that way tending.*

I said *for the most part*, because it is beyond controversy, the infection is communicated by other ways, as from pocky parents by inheritance ; by sucking an infected nurse, to the child ; suckling a diseased child, to the nurse ; lying also in bed with the diseased, without any carnal familiarity ; by which, though it may be possible for strong and vigorous bodies to escape, yet are the tender ones, especially of little infants, very likely to be contaminated, as I have more reason to believe than by bare imagination.

There are several other more uncommon ways of giving as well as receiving the *venereal* venom ; some of which I have already imparted to the world in short remarks upon a quack libel, printed several years past. But the thought of such vile monsters, and their execrable practices, is too shocking (unless to the dregs of human nature) to bear a repetition of circumstances, and fit only for a detestable *gonologium* or collection of smutt and obscenity, in which I am told, they have been inserted, as some of the author's own observations.

As for those fancied ways of catching it by common conversation, drinking after one, sitting on the same close-stool, drawing on a glove, wiping on the napkin or towel, after the infected person, with a hundred the like stories, I believe in our time (whatever may have happened formerly) there is no great danger. Yet we find in one of our late chronicles, that these and such like imaginations were so strongly riveted in men's minds at that time, even those of the better and more learned sort, that it was one of the articles against a noted cardinal that he had breathed on the king, when he, the said cardinal, had this disease upon him, which you will find in Baker's Chronicle, and of which passage Dr. Harvey has also taken notice.

Hildanus likewise tells us of a young gentlewoman, who contracted the same, by only putting on the apparel of a gentleman (that it seems was pox'd) at a masquerade, of which, through modesty concealing her illness (which first of all had seized the *Pudenda*)

till she was past recovery, she deceased. The good man's credulity, at least his charity, might however be abus'd in this relation, as the young lady perhaps was also after the masque, otherwise than by simply putting on the habit. But were it so as the case is stated, there is nothing therein much more admirable than what the same great man recites of a whole family he knew infected, viz: the wife with three children and a fourth in the womb, as also a maid servant, by the husband, who had got the distemper in their absence only by sleeping in the same bed with his man servant, whom he after understood was broke out with this distemper.

The relation of *Horst* and *Hornung* are yet more strange, of several people infected in the bagnio, by having the same scarificator apply'd after cupping, as had been used to a *venereal* patient, which seems alike credible with that of the priest poxed at his ear, in the time of confessing a wanton nun; the venomous breath from her mouth defiling the holy father. But enough of this.—Syphilis; A Prartical Dissertation on the Venereal Diseases By Daniel Turner, London: R. Bonwicke & Co., 1717, pp. 10, 11, 12.

John Hunter, in his "Treatise on the Venereal Disease," gives a number of instances of the communication of secondary syphilis, from which we select the following:

A lady was delivered of a child on the thirtieth of September, 1776. The infant being weakly, and the quantity of milk in the mother's breasts abundant, it was judged proper to procure the child of a person in the neighborhood to assist in keeping the breasts in a proper state. It is worthy of remark that the lady kept her own child to the right breast, the stranger to the left. In about six weeks the nipple of the left breast began to inflame, and the glands of the axilla to swell. A few days after several small ulcers were formed about the nipple, which, spreading rapidly, soon communicated and became one ulcer, and at last the whole nipple was destroyed. The tumor in the axilla subsided, and the ulcer in the breast healed in about three months from its first appearance. On inquiry, about this time, the child of the stranger was found to be short-breathed, had the thrush, and died tabid, with many sores on different parts of the body. The patient now complained of shooting pains in different parts of the body, which were succeeded by an eruption on the arms, legs and thigh, many of which became ulcers.

She was now put under a mercurial course, with a decoction of sarsaparilla. Mercury was tried in a variety of forms: in solution, in pills internally, and externally in the form of ointment. It could not be continued above a few days at a time, as it always brought on fever or purging, with extreme pain in the bowels. In this state she remained till March 16, 1779, when she was delivered of another child in a diseased state. The child was committed to the care of a wet nurse, and lived about nine weeks; the cuticle peeling off in various parts, and a scabby eruption covering the whole body. The child died.

Soon after the death of the child, the nurse complained of headache and sore throat, together with ulceration of the breasts. Various remedies were given to her, but she determined to go into a public hospital, where she was salivated, and after some months she was discharged, but not cured of the disease. The bones of the nose and palate exfoliated, and in a few months she also died tabid.

Of the various remedies tried by the lady herself, none succeeded so well as sea-bathing. About the end of May she began a course of the Lisbon diet-drink, and continued it with regularity about a month, dressing the sores with laudanum, by which treatment the sores healed up; and in September she was delivered of another child, free from external marks of disease, but very sickly, and it died in the course of the month.

About twelve months after the sores broke out again, and, although mercurial dressings and internal medicines were given, remained for a twelve-month, when they began again to heal up. * * * * *

The third case was of a gentleman, where the transplanted tooth remained, without giving the least disturbance, for about a month, when the edge of the gum began to ulcerate, and the ulceration went on until the tooth dropped out. Some time after spots appeared almost everywhere on the skin; they had not the truly venereal appearance, but were redder or more transparent, and more circumscribed. He also had a tendency to a hectic fever, such as restlessness, want of sleep, loss of appetite and headache. After trying several things, and not finding relief, he was put under a course of mercury, and all disease disappeared according to the common course of the cure of the venereal disease, and we thought him well; but some time after the same appearances returned, with the addition of swelling in the bones of the metacarpus. He was now put under another course of mercury, more severe than the former, and in the usual time all the symptoms again disappeared. Several months after the same eruption came out again, but in not so great a degree as before, and without any other attendant symptoms. He a third time took mercury, but it was only ten grains of corrosive sublimate in the whole, and he got quite well. The time between his first taking mercury and his being cured was a space of three years.—The Works of John Hunter, with Notes, edited by James F. Palmer. Vol. 2, pp. 475, 476, 484.

In an extract from a letter to Dr. Duncan, published in the "Medical Commentaries for the years 1783-84-85," it is said that a new disease has lately been discovered in London, occasioned by the transplanting of teeth from the head of one person to that of another. The mortality from it is computed at nearly two deaths to ten diseases; and about one in every hundred who receive teeth by transplantation are affected with the disease. Ulcerations of the throat and gums, and eruptions on the skin, are the chief marks of the disease. When death takes place it is from the occurrence of sphacelus. For five or six weeks after transplanting, the teeth look well, and are as firm as the others. Pp. 490-491.

In the third volume of the London Medical Transactions, Dr. William Watson, Vice President of the Royal Society, recorded an interesting case, illustrating the terrible effects of transplanting teeth, from which we extract the following particulars:

An unmarried lady, in the twenty-first year of her age, of a delicate habit, but in other respects in perfect health, observing one of the incisors of her upper jaw to become black and carious, determined on having it replaced by a sound tooth. This was accordingly done by an able dentist; the tooth which was introduced being taken from the mouth of a person apparently healthy in every particular. At the end of a month, her mouth, which had continued all that time a little tender, became very painful. Her upper gums were at first inflamed and enlarged; afterwards they were discolored and ulcerated. This ulceration spread very fast, insomuch that the gums of the upper jaw were corroded away, and the alveoli left bare. Before another month was at an end, the ulceration occupied the whole space under the upper lip between the teeth and nose; it extended likewise to the cheeks and throat, which were corroded by large, deep and fetid ulcers. Soon after this, part of the alveoli of the upper jaw became carious, one of her teeth dropped out; and in a few days a second tooth, together with the transplanted tooth, which hitherto had remained firm in its place. About this time blotches appeared on her face, neck and various parts of her body; and several of these became ulcerated sores. The fetid discharges from her mouth and throat had for a considerable time deprived her of sleep; and the soreness of the parts had prevented her from taking nourishment. And, in addition to these, the soreness from the external ulcers induced such a degree of fever that her death was soon expected.

When Dr. Watson was consulted, concluding that all her fluids were in a most putrid and acrimonious state, he directed peruvian bark combined with gum-myrrh in large doses. No benefit resulted from this plan, and the patient was placed upon alterative doses of mercury. The improvement was marked, the ulceration was arrested and the blotches began to disappear. The internal administration of mercury was abandoned, on account of its irritant effect upon the bowels, and the impression was kept up by rubbing mercurial ointment into her legs and thighs; this practice in like manner was attended with beneficial effects. In about ten or twelve days, the blotches had entirely disappeared and the ulcers of the mouth almost completely healed. The griping and purging, however, returned with such violence that Dr. Watson was compelled to abandon the mercury altogether. Small portions of the carious alveoli continued to exfoliate, the ulceration began again to spread, the patient labored under great weakness, with frequent returns of feverish heat, and was every night oppressed with colliquative sweats. Her strength gradually lessened, till death put an end to her sufferings.

As the progress of the disease was not impeded by the most powerful antiseptics in liberal doses, and as it gave way to mercurials even in small

doses, there appeared to be good ground for believing that the taint was truly venereal; but Dr. Watson, although aware of the great subtility of the venereal poison, was perplexed by the statement that the person from whom the tooth was taken was perfectly well, and never had any venereal taint.

Mr. Clement Hamerton, Surgeon to the Castletown Dispensary, has recorded in the Dublin Journal (March, 1841) cases illustrating the introduction of syphilis into the system, through other channels than sexual intercourse, from which he draws the following conclusions:

A healthy child is applied to the breast of a venereal nurse; in a couple of weeks syphilis shows itself in the child. A venereal child is applied to the breast of a healthy woman; soon afterwards she gets a syphilitic sore of the breast, which contaminates her system. A servant girl sucks a venereal sore breast, she gets a venereal ulcer of the mouth, which taints her system. The midwife has a slight scratch on the palm of the hand, and in delivering a putrid venereal child, she gets a sore on the hand which infects her system; and lastly the husband of the widwife is diseased at the time the ulcer exists upon his wife's hand.

Dr. Egan has recorded (Dublin Quarterly Journal, May, 1846) several cases illustrating the contagiousness of secondary syphilis. In the first case the child was born apparently healthy; eight weeks afterward syphilis appeared. An ulcer then presented itself upon the breast of the nurse, and secondary syphilis occurred. In the second case the child was born apparently healthy; about ten weeks afterward a suspicious rash appeared, succeeded by blisters and fissures about the mouth; ulcers occurred on the nurse's breasts, and then a scaly eruption and other secondary symptoms. Both cases were cured by anti-syphilitics. In the third case the woman was a dry nurse, being disqualified by age from suckling. The child was unhealthy, and affected with sores, of a brownish color, about the nates and mouth, and a constant flow of saliva. A scratch appeared on the neck of the nurse, whether produced by a pin or torn by the nails of the child was uncertain; but being in the habit of bringing the child's mouth in contact with the affected part, in order to induce sleep, the disease was believed to be communicated through the abrasion, and the local effect was succeeded by an eruption, cured by anti-syphilitics.

In a trial which took place at Cork, Dr. O'Connor and Dr. Bull gave evidence to show that a child affected with syphilitic eruption may convey the contagion to the nurse. (Lancet, July 4, 1846.)

Dr. Hector Gavin has given the history of a case where a man and his wife, purporting never to have had syphilis, had a first child born perfectly free from any traces of the disease, subsequently to which the diseased child of a woman known to have had syphilis, but *supposed* to be cured, was placed to the wife's breast, the nipple being "cracked" at the time, and the disease was communicated. (Lancet, July 18, 1846—Rankin's Abstract.)

Mr. Price, of Margate, has recorded the case of a woman who had syphilis, which commenced in the nipple, from nursing an infected child. She gave birth to one child affected with the disease, and to another dead child. The child from whom this woman derived the disease had a very sore mouth and smelt very badly, and its father was known to have secondary syphilis of an aggravated character. Another respectable married woman, six weeks afterwards, applied to Mr. Price, having syphilis, with a large sore on one of the nipples, and it turned out that this woman was nursing the same child which had affected the former nurse. This woman's own child also had the disease. This woman affected her husband. Two years and

five months subsequently she gave birth to another child; this was affected with syphilis; twelve months subsequently another child was born similarly affected, and after this the mother was cured with iodide of potassium. Several very remarkable cases by Lallemand, Dr. King and Dr. Maenick, will also be found in the twelfth volume of the Medical Times—pp. 81, 176, 422—Rankin's Abstract, v. 10, p. 336.

According to M. Rizzi, who had an ample field for recording facts relating to congenital syphilis, in a large hospital under his charge in the city of Milan, if a woman contracts specific ulcerations on the breast by suckling an infected infant, mucous tubucles very frequently develop themselves on the vulva and about the anus; and the syphilis, although secondary, is transmissible by contact, so that a perfectly innocent woman may communicate the disease to her husband; and it behooves the medical attendant to be well apprised of this fact, as upon his knowledge of it not only the health, but the peace of mind and honor of the individuals must rest.

Of one hundred individuals with chancres on the breast from impure lactation, or on the mouth or throat, derived from contact with an infected infant, thirty-four have tubercles of the vulva, nineteen syphilitic angina, three iritis, fourteen tubercles of the vulva and angina simultaneously, five tubercles of the vulva, and others disseminated over other parts of the body of divers complicated symptoms, six tubercles of the vulva, angina, tubercles on the skin and iritis, and nineteen no secondary symptoms.

In nurses, as well as in men infected with them, M. Rizzi has remarked that tubercles are the most common form of secondary symptoms, and angina is frequently superadded. A discharge, vegetations, and exostoses, are very rare, and buboes, when they occur, consist only of swelling and tension of the sub-maxillary or axillary glands.

In fifty-three infants, the disease manifested itself one month after birth in thirty-three; at the expiration of two months in eleven; of three months in four; and in one only after the expiration of eight months. These statistics show how easiiy parties may be deceived as to the condition of infants that have been subject to the syphilitic poison, from infants taken by them to nurse, without the slightest apprehension, whose parents even might not have a suspicion of the existence of the disease.—Rankin's Abstract, vol. v. p. 219, from Gaz. Med. di Milano, and Gaz. Med. de Paris, Oct. 25, 1846).

On the twenty-fifth of October, 1858, a letter was addressed to the Imperial Academy of Medicine at Paris, by the Minister of Commerce, Agriculture and Public Works, requesting an authoritative answer upon two question; first, whether consrititirnal syphilis was contagious; and secondly, whether, as regards contagion, there was a difference between constitutional syphilis as seen in infants at the breast and in adults. This letter led to the appointment of a commission consisting of MM. Velpeau, Ricord. Devergie, Depaul, and Gilbert, and these commissioners reported and their report was adopted by the Academy,—first, that some of the manifestations of secondary syphilis, especially condylomata, are undoubtedly contagious; and secondly, that there is no reason to suppose that the case is different in infants at the breast and in adults.

The commissioners arrived at this conclusion after examining the clinical facts and experimental researches already on record, and after four experiments of their own, which was taken with great reluctance on their part. The persons experimented upon were all suffering from lupus, but free from any syphilitic taint, and these were chosen from the notion that the treatment for syphilis, if the inoculation took effect, might possibly be of service in remedying the lupus.

The following case will serve as an example of the four experiments:

On a man whose face had been affected with lupus from childhood, a raw surface was made on the left arm by strong ammonia, and to this was applied a piece of lint soaked in purulent matter obtained from a condyloma near the anus of a person who had had a chancre fifteen months previously. The condyloma was of fifteen days standing. Fourteen days afterwards there was slight redness at the seat of inoculation. Four days later still, a prominent coppery-colored papule made its appearance in the same part. On the twenty-second day this papule was much larger, and there was a slight oozing from the surface. During the week following, the oozing, after being purulent, dried up into a thin scab. On the twenty-ninth day a gland in the corresponding axilla became enlarged. On the fifty-fifth day, the papule on the arm had become a real tubercle, with some slight ulceration in the centre, and several blotches and coppery papules had made their appearance on the trunk. During the week following, these papules became multiplied on the body, and they spread also to the extremities; many of them also changed into pustles of acne. Two or three days later the patient was put under the treatment for syphilis, and in six weeks, at the date of the report, there was still much to be done in the way of a cure.

In addition to asserting the contagiousness of secondary syphilis, the commission arrived at the conclusion that there are characteristic grounds of distinction between the primary and secondary affection, and that the period of incubation in the secondary affection is from eighteen to twenty days, or even longer; and that the result is first a papule, and then a tubercle, which is finally converted into an ulcer covered with a crust.—Rankin's Abstract, No. 30, p. 272, from Comptes Rendus, May 24 and 31, 1849.

We might greatly multiply such facts from various authors, but this appears to be unnecessary, as the experience of the authors just quoted covers three centuries; and we are justified in affirming that it is now clearly established that constitutional syphilis can be transmitted by direct inoculation with the secretions of secondary sores.

And recent experiments have shown that the blood of persons affected with constitutional syphilis is capable when inoculated on healthy subjects of giving rise to syphilitic disease.

Waller succeeded in inoculating a healthy boy fifteen years old, with this disease, by applying the blood of an individual affected with secondary syphilis to incisions made by a scarificator on the body of the boy. Well marked and unmistakable symptoms of secondary syphilis followed this experiment.

In Gibert's case, the blood was taken from a large squamous papule on the forehead. "The point of the lancet was thrust into the *circumference* of the papule, and charged with a blood *which was somewhat serous.*" It may be objected that the blood in this experiment was mixed with some of the diseased secretions within the papule itself.

The secretary of the Society of Medicine of the Palatinate communicated the general results of the inoculations performed by an individual. "Of those men inoculated with the same blood, three were successful, and there were cases where a large absorbing surface had been rubbed."—Archives Générale, secs. 10, 11, p. 603.

Whatever objections may have been urged to these experiments, no fault can be found with the well-conducted experiments performed by Prof. Pelizzari,* of Italy, in 1862.

As this subject is of great interest, we present the account of these experiments:

*Lectures on Syphilis, by Henry Lee, 1863; p. 198.

This physician inoculated two medical students with the blood of a syphilitic patient with a negative result. On the sixth of February, 1862, he resumed his experiments, three physicians, Drs. Bargioni, Rosi, and Passagli submitting themselves to his investigations. The blood of a female patient, aged twenty-five, affected with constitutional syphilis, and who had undergone no treatment, was used for the purpose. The blood was drawn, with a new lancet, from the cephalic vein. The patient was at the time affected with mucous papules on the left labium, at the place where the chancre had existed; mucous tubercles surrounded the anus, and the inguinal glands were indurated and enlarged, and there were pustules on the head. At the point on the arm from which the blood was drawn there was no sign of any eruption, the skin of the part was well washed, and the surgeon washed his own hands. The bandage was new, as was also the vessel in which the blood was received. As the blood escaped from the cephalic vein, some of it was received on a piece of lint, which was placed on the upper part of Dr. Bargioni's arm, where the epidermis had previously been removed, and three tranverse incisions made. A similar operation was performed on the other two gentlemen, but in the case of one the blood was cold, and in that of the other it had coagulated.

After twenty-four hours the dressings were removed, and nothing was observed but the crusts formed by the effused blood. Four days afterwards all traces of the inoculations had disappeared.

On the morning of the third of March, Dr. Bargioni informed Prof. Pelizzari that in the center of the inoculated surface he had noticed a slight elevation, which produced a little itching. The arm was examined, and at the point indicated Prof. Pelizzari found a small papule of a roundish form, and of a dull-red color. On the eighth day the papule had augmented to the size of a twenty-centime piece. On the eleventh day it was covered with a very thin adherent scale, which became denser, and on the second day commenced to crack in its central part. On the fourteenth day two axillary glands became enlarged to the size of nuts. The papule remained indolent, and there was no induration at its base. On the twenty-first, the scale was transferred into a true crust, and the part beneath was ulcerating. Slight induration was more evident. On the twenty-second the crust was detached, leaving a funnel-shaped ulcer, with elastic and resistant borders, forming an annular induration. There was but a small amount of secretion from the sore, and the pain was trifling. On the twenty-sixth the ulcer had become as large as a fifty-centime piece, and the surrounding induration was considerably increased. Up to the fourth of April the ulcer remained stationary, but at that date its base appeared to be granulating. The axillary glands remained swollen, hard, and indolent. Slight noctural pains occurred in the head about this time, and the posterior cervical glands became somewhat enlarged. On the twelfth of April spots of an irregular form and of rose color appeared on the surface of the body. The eruption extended itself, and during the succeeding days became more confluent. No constitutional disturbance, heat of skin, or pruritus accompanied it. On the twentieth the cervical glands had increased in size and were harder. The chancre mantained its specific character and exhibited no tendency to cicatrization. On the twenty-second the color of the eruption was decidedly coppery. Small lenticular papules were now perceived to be mixed with the erythema. The edges of the chancre had begun to granulate. Mercury was now administered.

This case is of itself sufficient to prove the inoculability of syphilis through the blood of an infected person.

No objection can be urged against this inoculation, that any precaution against a fallacious result had been neglected.

The following may be accepted as the generally received doctrines with reference to the inoculation of syphilis:

1. There are two kinds of primary venereal sores, namely: The *simple contagious ulcers of the genitals;* the "*soft*" or "*chancroid*" ulcer; and the *true chancre*—the "indurated" or "Hunterian" chancre.

The soft or chancroid ulcer is a purely local disease, accompanied by *suppurating* enlargement of the lymphatic glands of the region in anatomical relation to the seat of the sore; it is *non-infecting*, the general constitution not being affected or infected by the virus which produces it.

The poison of soft chancre can be transferred or transplanted by contagion, or by inoculation from one part of the body to another, and thus the person who is the subject of it may come to exhibit second sores of a similar character on more parts than one; it is, therefore, said to be *auto-inoculable.* The general system not being infected, an attack of the primary disease is not succeeded at any future time by general symptoms; and the primary attack affords no immunity against a future contagion.

The true indurated or Hunterian chancre, although at first apparently a local disease, does not remain long a purely *local disease;* it is accompanied by indolent, *non-suppurating* multiple enlargements of the related lymphatic glands, and its virus infects or contaminates the whole system, which is thus protected against a second miasm of the primary disease. The general infection of the system exhibits itself in various ways, or by certain general symptoms, called *secondary, or tertiary, or constitutional syphilis.*

It does not follow necessarily that the two forms of venereal ulcer are due to two specifically different kinds of virus.

Thus some surgeons of eminence hold with Dr. Boeck, of Christiana, that the soft chancre is produced by the same virus as the indurated chancre; the two forms arise from the *intensity* of their virus being different. Soft chancres are held to be the product of the most energetic virus, which by its intensity develops in its circumference an inflammation which puts an obstacle in the way of absorption; indurated chancres are the product of a virus of less intensity, which does not develop an inflammation sufficiently strong to impede absorption. When the matter is very intense we get a definite soft chancre; if it is of little intensity we get a definite indurated chancre. It is with matter of an intensity different from these that we obtain intermediate forms of chancre, to which, with all our experience, we are uncertain whether or not the primary affection will be succeeded by constitutional syphilis.

Syphilis, in its manifestations as a general or constitutional disease, has a period of incubation, short sometimes, but at other times prolonged. Constitutional symptoms rarely occur before the third week following the appearance of the primary symptoms, and more rarely still after the sixth month. The interval is one marked by no characteristic disturbance of the general health. The infection may not manifest itself until some disturbance of the constitution is brought about. For instance, Bamburger, of Wurzburg, mentions two cases where secondary manifestations did not appear until the occurrence of small-pox. In like manner, vaccination may cause such a disturbance in the system infected with the syphilitic poison, as to excite the manifestation of secondary or constitutional symptoms.

2. Constitutional syphilis is transmissible to offspring; it is an *hereditary disease*, and like the constitutional malady in the parent, it exhibits its manifestations generally in their system. The symptoms of hereditary or congenital syphilis are secondary and constitutional symptoms. Hereditary syphilis exhibits itself in the offspring of syphilitic parents, not in the primary form of a chancre, but in some of its secondary constitutional forms.

3. Syphilis is contagious and inoculable, both in its primary form and in its secondary or constitutional stage; and when it is thus transmitted to the healthy it always appears first in the primary form. Not only can the disease be propagated from the original chancre, and from the syphilitic eruptions, but by inoculations as shown by the experiments of Wallace in 1835, by Vidal in 1849, by Waller in 1850, and by Rincker in 1852. All the observers assert that where the inoculation was performed with the morbid secretions of constitutional syphilis, the result was a *primary lesion*, having all the characters of an infecting chancre. A remarkable character of these inoculations was the *period of incubation of the disease*, which never appeared before the expiration of the second week, but in general not till after the expiration of *the fourth* week.

The interval between the introduction of the virus and the appearance of the local disease, was much longer than when inoculation was practiced from a primary sore. The first alteration was always observed at the spot

where the inoculation had been practiced; the disease produced had a *progress essentially chronic*, so much so indeed, that the local affection was still present when the generel symptoms appeared if not subjected to treatment.

The general symptoms only appeared at the end of a month, and often much later, after the first manifestation of the local lesion.

4. Whether syphilis be really derived from a *primary*, or from a *secondary* affection, *the disease which appears upon the recipient is always the primary form of syphilis*, always *a chancre*, or the induration which only requires the most trifling modification to become a sore.

A chancre appears at the place *where the matter of contagion from the secondary lesion has been applied.*

The imparted disease never appears first in the form of a constitutional malady, at the due time secondary symptoms become manifested.

There intervenes an incubation of about three weeks.

This is, then a mark, a test by which we can distinguish between an imparted syphilis and one which is merely aroused from latency in an individual already tainted. In the former case, the first thing observed is a *chancre;* in the latter there occurs no chancre, but the disease appears at once in its *secondary or constitutional* form.

When therefore syphilis occurs after vaccination, first in one of its constitutional manifestations, it is a proof that it was not imparted by contagion, but is the result of an inherent constitutional taint.

5. Syphilis may be communicated by inoculation of the blood of a person, whose constitution is infected with syphilis; and from whatever source, the disease which first results is a chancre, the primary form of syphilis.*

III. COMMUNICATION OF SYPHILIS BY VACCINATION: POST VACCINAL SYPHILIS—VACCINO SYPHILITIC INOCULATION.

III. As we have before said, in the third section of this inquiry, the acceptance without reserve of the doctrine of John Hunter, expressing the impossibility of the coëxistence of two actions, or two local diseases, or two different fevers, in the same part, or in the same constitution, at one and the same time, would necessarily lead to the denial of the possibility of transmitting syphilis, through the medium of the matter produced by a distinct disease as cow-pox.

What are called pathological *laws*, are nothing more than expressions of the fixed modes in which the phenomena of disease are manifested, and they conform to truth, only when they conform to, or formulate, the established course of nature. It is evident that a law may correctly express the relations of a certain class of facts and phenomena, without necessarily embracing other facts and phenomena, which upon a superficial view are related to those undoubtedly embraced by the law.

Whilst the law of Hunter may express the relations of the actions of the special poisons of the exanthemata (and we have shown in the third section, that it was from this very class of diseases, that the law was formulated), it does not at all necessarily follow, that it is applicable to the actions of poisons differing wholly in their nature, mode of origin, and pathological processes.

The poison of syphilis, after its introduction into the system, induces profound alterations in the blood, and in the processes of secretion and nutrition, and, in fact, produces derangement through all the solids and

*Ballard on Vaccination, p. 302.

fluids. The economy under the action of constitutional syphilis, is to be looked upon as entirely deranged. When, therefore, another disease is engrafted upon this state, the product of that diseased action must partake, more or less, of the diseased condition of the blood and tissues. Does any one deny this, with reference to the products of inflammation excited in the syphilitic subject? Where is there sufficient proof to show, that syphilitic blood and lymph, furnishing materials for the elaboration of the vaccine matter, loses, altogether during this new process, its contagious and poisonous properties in the vaccine vesicle? Is not the vaccine vesicle but the manifestation of a general disease affecting the entire system, just as the eruptive skin affection of syphilis is the manifestation of a disease pervading the entire system? In addition to the facts recorded in this inquiry, is it not well known that the fetus in ultero is affected by the vaccination of the mother? And it is probable, though experiments are as yet wanting, that the blood of one suffering with the vaccine disease may propagate the disease by inoculation.

If then it be possible to produce a protective vaccine pustule in an individual suffering from secondary syphilis, then it is established that two local and two constitutional diseases may exist at the same time and in the same constitution, and the law of Hunter falls to the ground, as far as the action of these two animal poisons is concerned.

If the law of Hunter be universally applicable, we should have no vaccine disease produced at all, upon individuals suffering with constitutional syphilis.

But even admitting that the special contagious matter of cow-pox, formed from the blood of one suffering with constitutional syphilis, is free from the poison of syphilis, how can we practically, in the process of vaccination, separate this from all admixture with the diseased epithelial cells, cellular tissue, and syphilitic products of the skin and blood. If the dried scab be used, does not this cover, and in fact has it not been formed from a circumscribed portion of structure which had been originally tainted with syphilis, and are not its borders encrusted and mixed up with the products of the secondary diseased skin?

The truth is, that we have much yet to learn about the phenomena manifested by the living organism when acted upon simultaneously by two or more poisons. Much of our established treatment consists in the use of certain poisons, often related to those under which the system is laboring.

In this inquiry we do not need pathological formula and generalizations, so much as well authenticated facts.

We cannot subscribe to the doctrine, that practically all danger may be avoided, by proper caution, as "every morbid appearance on the cutaneous envelope has its own peculiar character, by which it may be distinguished from other similar phenomena, and thus the observer may easily establish a distinction between the vaccine vesicle and other vesicular, bullar, or pustular eruptions." Is it not well known that syphilis may lurk for years in one individual, never occasioning so much inconvenience as to arouse suspicion, until it is unmasked by the unexpected appearance of an infected offspring? On the other hand how fearful and destructive is the progress of the disease in others, in which from the first apperance of the chancre, symptom follows symptom, sore throat, swelled testicle, iritis, eruptions, nodes, ulcerations, and caries, until the entire body has become apparently a mass of filth and rottenness.

We are utterly and profoundly ignorant of the variations of the vaccine vesicle under these different states of the constitution; and we are utterly

and profoundly ignorant of those conditions which are essential to the transmission of the syphilitic poison through the medium of the vaccine vesicle.

But to the facts:

About twenty-nine years ago a medical man was condemned to two years imprisonment for having vaccinated several children from a child exhibiting a syphilitic eruption on its face and body. The witnesses asserted that the vaccine pustules had not been properly developed, and were followed by tedious ulcerations. Moreover, nine grown-up persons were asserted to have been re-infected by the children tainted through the vaccine pustule.

The judgment was commuted, in consequence of the opinions expressed by Messrs. Heyfelder and Pauli, two distinguished medical men of Rhenish Bavaria, whose judgment had been supported by that of Ricord and Cullerier, who utterly denied the possibility of communicating the syphilitic poison by the agency of vaccine lymph.—(B. and F. Med. Chirurg. Rev., Oct., 1855, from Bull. Gén. de Thérap, July, 1855).

Dr. Whitehead has made the following statement in the "Third Report of the Clinical Hospital, of Manchester," p. 52:

"The occasional presence of eruptions on the skin and other forms of disease, as an entailment apparent or actual of vaccination in a family not previously subject to such affections, undoubtedly operates in the minds of many very much to the depreciation of the procedure as a preventive and healthful measure; and certainly in not a few instances there would seem to be just and sufficient reason for such prejudice. But the cause of this is not to be found in the vaccine virus in its pure state; it is due to a morbid material superadded, and its nature peculiar and extraneous. *The noxious matter commonly conveyed by vaccination is the syphilitic poison.* A child of naturally vigorous constitution, whose blood is tainted with the poison of syphilis, may retain the outward appearance of health up to three, six or twelve months, or even two or three years longer before a characteristic outbreak shows itself. The parents of such a child may also have the semblance, to superficial observation, of faultless health, although still possessing the seeds of the malady in a degree sufficient for its transmission to their offspring. *It is from such sources that mischief is often derived and disseminated, by vaccination, and other modes of implication;* and it is true that the efficacy of this great sanitary measure has been *in many instances* rendered questionable."

Dr. Whitehead furnishes a table of sixty-three cases of infantile syphilis, treated in the course of twenty-two months at the Clinical Hospital, of Manchester, and out of these cases he attributes no less than fourteen, or twenty-two per cent., to vaccination.

This proportion appears to be almost incredibly large; and the statement of Dr. Whitehead is singularly at variance with that of such men as Acton, Erasmus, Wilson, Watson, Jenner, Simon, De Merie, Henry, Lee and other distinguished surgeons and physicians.

Another case is recorded by Dr. Whitehead in his work, "On the transmission from parents to offspring of some forms of disease, and the morbid taints and tendencies," 1851, p. 17.

Cerioli, of Lucca, relates two instances illustrating the transmission of syphilis by vaccination. In one forty-six children were vaccinated from an apparently healthy child, and of the entire number only six escaped syphilitic contagion; in the other several children received syphilis at the period of vaccination from a child *apparently healthy*, but whose father was syphilitic, the child herself presenting what were believed to be syphilitic symptoms at a subsequent period.

Similar cases have been recorded by Hübner. Eight children vaccinated from a child apparently healthy, but as subsequent investigation showed contaminated by its mother with syphilis, presented ulcerations at the vaccine punctures and manifested constitutional symptoms. Five other children vaccinated at the same time from the same child escaped.

M. Viennois* has collected many cases of the transmission of syphilis by vaccination, and has summed up his conclusions from the data on hand. From his observations and researches it would appear that syphilis cannot be communicated by vaccine virus taken from a subject affected with the disease unless a portion of the blood of the individual is also inoculated. Thus he says:

"When the vaccine virus of a syphilitic subject, pure and unmixed with blood, is inoculated on a healthy individual, a simple vaccine pustule is obtained, without any near or remote syphilitic complications being produced.

"On the contrary, if, with the vaccine virus of a syphilitic individual who either has or has not at the time constitutional accidents, a healthy person is vaccinated, and the point of the lancet be charged with a little blood at the same time as with the vaccine virus, both diseases may be transmitted by the one operation—the vaccine disease with the vaccine virus, and syphilis with the syphilitic disease."

M. Viennois also concludes that in such cases the vaccine vesicle is developed first, and that after undergoing its incubatory period the syphilitic ulcer, with all the characteristics of a true chancre appears.

The following are the conclusions of M. Viennois.

1. Syphilis has in many instances been observed to follow vaccination, ever since the introduction of that operation, and by authors worthy of credit, French, English, German, Italian, etc.

2. When a syphilitic subject is vaccinated, in whom the disease is in a latent state, syphilitic symptoms may be developed by the vaccine influence; these symptoms often consist in general eruptions of a papular, vesicular character, but a chancre never forms at the seat of the vaccinal puncture.

3. On the contrary, if a healthy subject be vaccinated with vaccine virus taken from a syphilitic subject, and the lancet be charged at the same time with a little blood, as well as vaccine matter, the two diseases may be conveyed by the same puncture—the vaccine with the vaccine matter, and syphilis with the syphilitic blood.

4. In these cases, of which a number are on record, vaccination is first developed because its period of incubation is shortest, and its evolution more rapid than that of syphilis. The latter appears subsequently, and manifests itself by its characteristic lesion at the inoculated spot.

5. The initial lesion, then, by which syphilis, following the vaccinal pustule, manifests itself, is an indurated ulcer, with adenitis; in a word, all the phenomena of primitive syphilitic chancre. The great law announced by M. Rollet, that syphilis always commences by a chancre, even when it result sfrom secondary symptoms, or even from syphilitic blood, is thus fully confirmed.

6. After the primary chancre is developed at the inoculated spot, and in the usual period, secondary syphilis occurs, and runs the usual course, as if transmitted in any other way.

7. When the mixture of virus does not take place accidentally, but is affected intentionally, (as practiced by MM. Spèreno and Daumès, by mixing the vaccine matter with the pus of chancre), the result is the same; one virus does not destroy the other, but each runs its separate course.

8. The vaccine matter thus acts as a simple vehicle for the virus contained in the syphilitic blood, which it divides and dilutes, as a drop of water would do, without at all modifying its properties or its effects.

* De la Transmission de la Syphilis par la Vaccination. Archiv. Gen. de Med., Juin, Juillet, et Septembre, 1860.

9. It is important, then, never to take the vaccine virus from a suspected person, or from an infant whose parents are unknown before the age at which hereditary syphilis usually manifests itself,

10. If circumstances make this last necessary, great care should be taken to collect only the vaccine matter, free from blood or any syphilitic humor.

11. In no case should a healthy subject be vaccinated with matter taken from a syphilitic subject, for in spite of all precautions, there can be no certainty as to the purity of the vaccine matter.

12. These precautions are the more important, because, with the matter from one syphilitic subject a number of persons may be vaccinated, and syphilis conveyed to many (as seen by Ceriale, of Cremona).

13. It is sufficient to point out these precautions, to avoid new evils, and to remove the cavils of the enemies of vaccination; for in these cases, the propagation of syphilis is not the fault of vaccination, but of the vaccinator.—Gaz. Mèd. de Paris, Jan. 26, 1861. American Journal of Medical Sciences, April, 1861.

These views of M. Viennois have received the most ample confirmation from the tragedy which occurred at Rivalta, in Italy, by which forty-six children and twenty nurses had syphilis communicated to them through vaccination, and of which several of the children died. The full details of this remarkable event are given in a memoir by Dr. Pacchiotti,* of Turin.

On the twenty-first of May, 1861, Sig. Cagiola vaccinated Giovanni Chiabrera with lymph contained in a tube sent from Acqui. The operation was performed in the usual manner and with a perfectly clean lancet. The child was eleven months old, and in good health at the time. Forty-six other children were, ten days subsequently, vaccinated with the lymph taken from the vesicle of this child; and ten days after this, seventeen children were vaccinated with lymph taken from the arm of Lugia Manzone, one of the forty-six first vaccinated.

Of these sixty-three children, forty-six—thirty-nine of the first lot and seven of the last—were within two months attacked with syphilis. On the seventh of October seven of them, including the little Manzone, were dead, three were yet in danger of dying, fourteen were recovering under the use of mercury and iodine, and one was well.

A medical commission was now appointed to inquire into all the circumstances connected with this fatal event, and they proceeded to the execution of the duty assigned them.

Twenty-three children were examined in full; the others were not so accurately noticed, as their parents had neglected to avail themselves of medical aid in time. In the forty-six children who were affected, syphilis appeared at periods varying from ten days to two months after vaccination, the average time being twelve days. The initiatory symptoms were variable. Sometimes just as the vaccine vesicle had healed, it became surrounded with a red, livid, and copper-colored areola, and ulcerated again. In other instances an ulcer would form on the cicatrix, and become covered with a scab, which in a few days would fall off to make room for another, and so on. In others the vaccine vesicles had an unhealthy appearance from the first, and were accompanied by a general eruption.

The principal symptoms observed by the commission were mucous tubercles in the vicinity of the anus and on the genitals, ulcerations of the mucous membrane of the lips and fauces, engorgement of the lymphatic glands in the groin and neck, syphilitic skin diseases, alopecia, deep tubercles, gummy tumors, etc.

In two subsequent papers, Dr. Pacchiotti* continues the detail of his investigations. On the eighth of February, twenty of the mothers or nurses of the forty-six children had become affected with symptoms of syphilis. He ascertained, too, from a revaccination of five of the children, that the occurrence of syphilis had not destroyed the efficacy of the first vaccination. But he also discovered the source of the infection. It appeared that a year and a half previously a young unmarried woman had syphilis, and that she was syphilitic at the time Chiabrera was vaccinated. The woman was the mother of a child which had died syphilitic three months after its birth. After the death of the child she was in the habit of having her breasts drawn by the little Chiabrera, and gave

* Sifilide trasmissa per Mezzo della Vaccinazione in Rivalta, presso Acqui. Gazetta della Associazone Med., Octobre 20, 1861.

him the clothes which her own child had wore. Another child nursed by this woman, but who was not vaccinated, also became syphilitic, and this child infected its mother just as little Chiabrera did his mother. It is therefore shown that the vaccine virus used on Chiabrera was not at fault, but that all the other forty-five children were infected through the lymph taken from his arm. It is also shown that blood was on the lancet when several of the children were vaccinated.

Dr. Pacchiotti, as the results of his investigations and those of the commission gives the following rules to be observed in vaccinating :—

2. Inquire into the state of the parent's health.

3. Take the lymph in preference from those children who have passed the fourth or fifth month, as hereditary syphilis appears in general before that time.

4. Do not use lymph taken from a vesicle which has passed its eighth day, because on the ninth and tenth days the lymph becomes mixed with pus, which latter may be of an infectious character.

5. In taking the lymph, avoid hemorrhage, as there is less danger with lymph free from blood.

6. Do not vaccinate too many children with the same lymph.

In consequence of the publication of the details of the lamentable affair at Rivalta, Dr. Marone concluded to relate the particulars of a similar event which occurred to him, and in regard to which he had thought it advisable to maintain a discreet silence. The particulars are given with sufficient fullness by Mr. Lee, whose excellent work I have already referred to several times.

It seems that in November, 1856, Dr. Marone obtained some vaccine lymph, with which he vaccinated a number of children at Lupara. The lymph was contained in glass tubes, and Dr Marone noticed that it was mixed with a little blood, which affected its transparency. Of the number of children vaccinated with this lymph, notes were preserved in twenty-three cases. All these were affected with syphilis, and the disease likewise manifested itself among the mothers, nurses, and even the servants who were brought in contact with them. The symptoms with which the children were affected consisted chiefly of a syphilitic character, and subsequently of mucous tubercles at the angles of lips, around the anus, and on the vulva. The post-cervical and inguinal glands were enlarged, and there was emaciation, in degree varying with the severity of the syphilitic symptoms.

Besides these cases, eleven nurses of the number who suckled these children gave the disease to eleven other children who were not vaccinated.

In some of the cases the syphilitic phenomena continued till April, 1859.

Dr. Marone draws the following conclusions from his experience :

"That the syphilitic virus was really transmitted in the above recorded cases by means of vaccination.

"That the children vaccinated suffered first, and became the means of transmitting the disease to others.

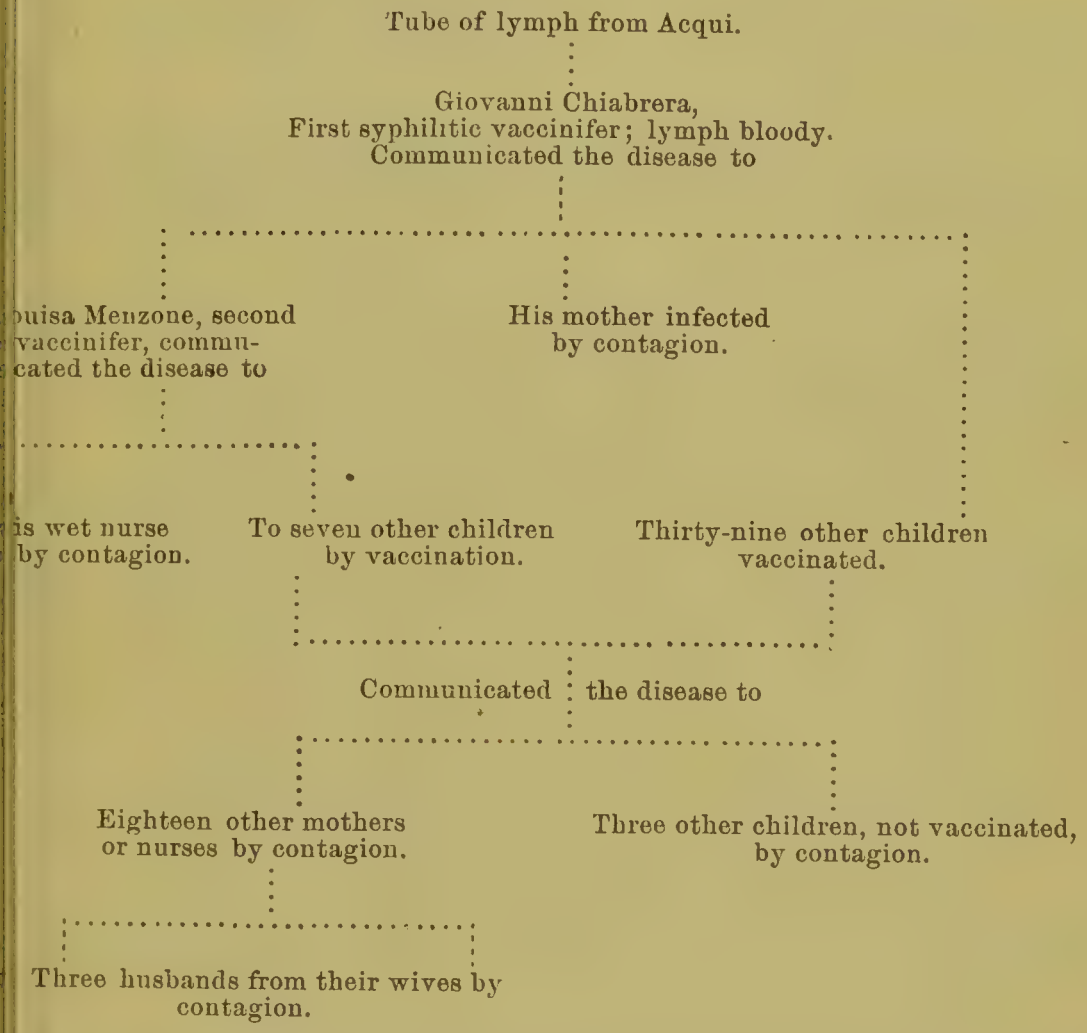
"That the lymph used for the purpose of vaccination was impure, being mixed with blood, and that the result shows how necessary it is to abstain from using lymph of that description."

In the sad tragedy enacted at Rivalta, a child named Chiabrera was vaccinated; from him another child named Manzone was revaccinated, with forty-five other children. Syphilis was conveyed from Chiabrera to thirty-nine children, and communicated to his mother. The same disease was conveyed from Manzone to seven children and his wet nurse. Both vaccinifers were very ill, and one died three months after vaccination. Twenty nurses or mothers were known to have been similarly affected; in three cases the same disease was again communicated from the mothers to their husbands, and in three other cases the disease was communicated to other healthy children.

The annexed diagram furnishes a view of the progress of this terrible disease previously unknown at Rivalta, a village containing not more than two thousand inhabitants:

L'Union Medicate, Fev. Seme et Avril 3eme, 1862.

ENEALOGICAL SCHEME OF THE RIVALTA SERIES OF VACCINO-SYPHILITIC INOCULATIONS.



A series of cases similar to those which occurred at Rivalta, is related by r. Marone to have happened at Lupara. Dr. Marone ascribed the cause f the inoculation to the admixture of some blood with the vaccine lymph.

THE LUPARA SERIES OF VACCINO-SYPHILITIC INOCULATIONS.

This series occurred in 1856, but was kept secret until the Rivalta series had been made public, and the subject was undergoing discussion in medical circles.

M. Marone, in whose practice it occurred, and who published his account of it in 1862, (Impraziale de Florence, No. 5, 1862), states that he had not dared to make it known before, partly because of his own reputation, and partly because he feared that he should injure the cause of vaccination.

Prior to 1856, syphilis had not been observed among the peasants of Lupara.

The following is the summary furnished M. Depaul (De la Syphilis Vaccinale, etc., p. 108):

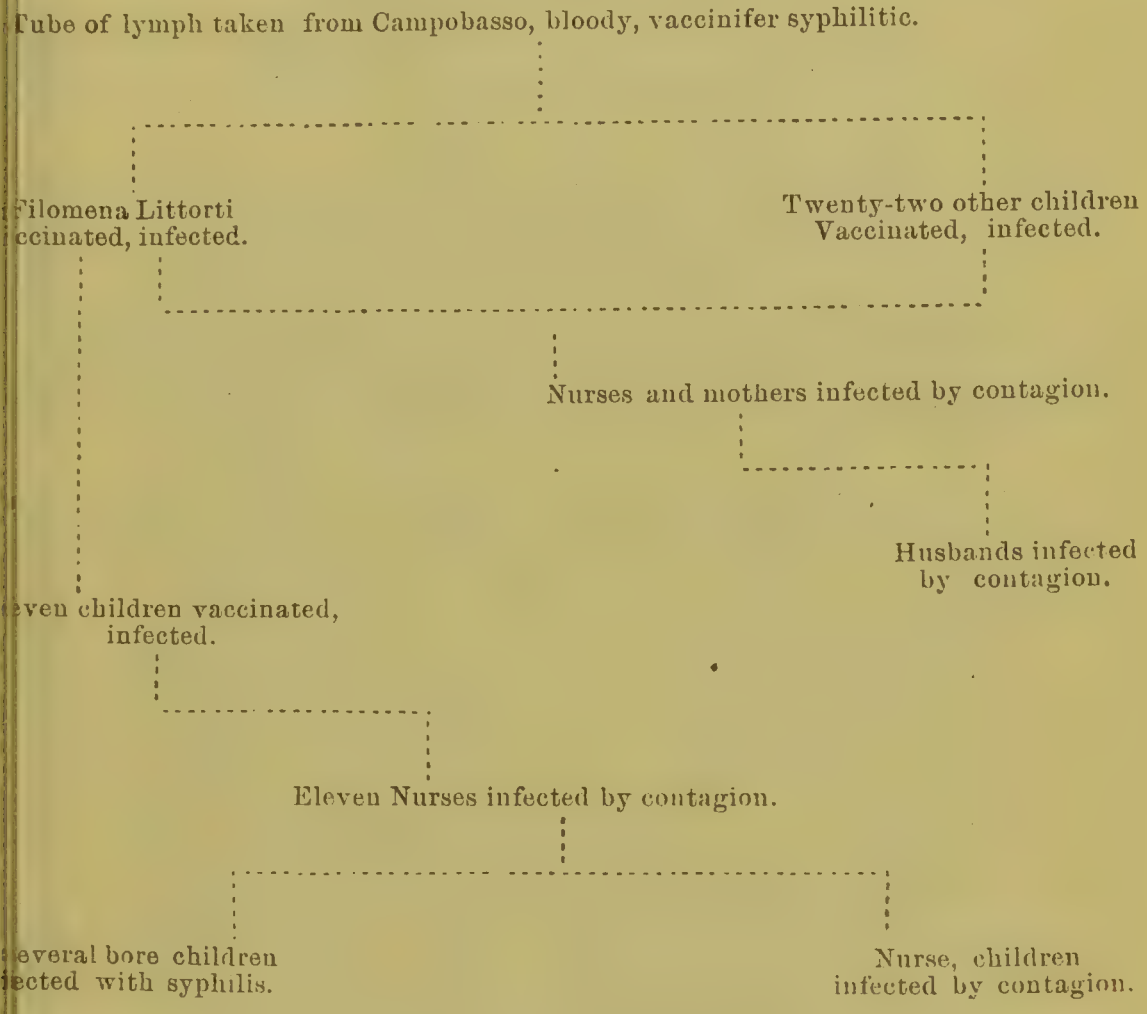
"M. Marone obtained some lymph in tubes from Campobasso; it was transparent, but tinged with blood. A large number of infants were vaccinated, and twenty-three of them were infected with syphilis. He gives the names and ages, which last varied from five to ten months. All the children, as well as their parents, were healthy at the time of the vaccination. The vaccinal eruption proceeded regularly up to the period of desiccation; but then the dry crust began to soften anew, and when it fell off an ulcer with indurated base was found to occupy its seat. In other cases the dry crust remained adherent for an unusual length of time, and then fell off.

At the expiration of a few days the cicatrix reopened and a sore was produced, having all the characters of an indurated chancre, and lasted a month or six weeks. In all the subjects indolent, non-suppurating, enlarged glands in the axilla were observed. In all of them also, toward the middle of January, the general symptoms of syphilis appeared—roseola, papules, pemphigus, mucous patches on the lips, mouth, anus and genitals, with inguinal and cervical glands engorged. The nurses were infected in their turn with indurated chancres on the breast; and at a latter period, that is, after five or eight weeks, they had also general symptoms, roseola, psoriasis, impetigo, mucous patches, etc. In their turn, also, the mothers imparted the disease to the fathers.

M. Marone has since learned that the vaccine sent from Campobasso had been furnished by a little girl who died some time after vaccination from an eruptive affection, the character of which, however, has not been thoroughly determined.

Filomena Littorti, one of the twenty-three infected, served for new vaccinations. Eleven infants were contaminated. First they had the characteristic primary affection, and then the consecutive phenomena. Mothers were again contaminated and they infected others. The disease having been at last recognized, a specific treatment was instituted; but nevertheless several of the children died. Eleven nurses, infected by the vaccinated children, infected in their turn other children who were not vaccinated, but who had been suckled by them. Several of the contaminated women, too, having fallen pregnant, were confined either prematurely or at full term of children, dead or living, but *in every case bearing the marks of congenital syphilis.*

ENEALOGICAL SCHEME OF VACCINO SYPHILITIC INOCULATIONS—LUPARA SERIES.



THE BERGAME OR TORRE DE BUSI SERIES OF VACCINO-SYPHILITIC INOCULATIONS.

This series was reported to the Conseil de Santé of Bergame, in 1862, by Dr. Adelasio, and is included in a paper read to the Congress of Lyons by M. Viennois. (De la Syphilis Vaccniale, etc., p. 303. Vaccination, Edward Ballard, p, 337.)

In the autumn of 1861, M. Quarenghi, a physician at Terre de Busi, vaccinated Pierre Ferrari with lymph which had been preserved from the last season six months previously. The pustules were well developed, and presented all their normal characteristics; so good were they that they were selected for the vaccination of the following season. In none of the subjects vaccinated at this time did the vaccination produce any morbid complications. It is to be observed that Ferrari died a year afterwards, it is said, of severe cough. The parents, when examined, in April, 1863, were found perfectly healthy, and they had a reputation of being moral.

On May 8, 1862, Girolama Carenini, born of parents young and in perfect health, was vaccinated with the lymph of Ferrari, preserved in tubes. It does not appear in the statement that other children were vaccinated with the same lymph. It is stated by the *mother* of the children who were vaccinated from Girolama that, although she was plump and of a good color, they noticed here and there upon her an eruption which, by the description given, was something like chicken-pox. The pustules from which the lymph was taken were fine, and the operation itself was performed *with a needle*, without any blood being drawn. When the child was examined subsequently, five natural cicatrices were found, and there was nothing observed upon the body of the child. The parents were also carefully examined, and no traces of syphilitic affection was found upon them. All that they would admit was that the child had got an eruption from exposure to the sun.

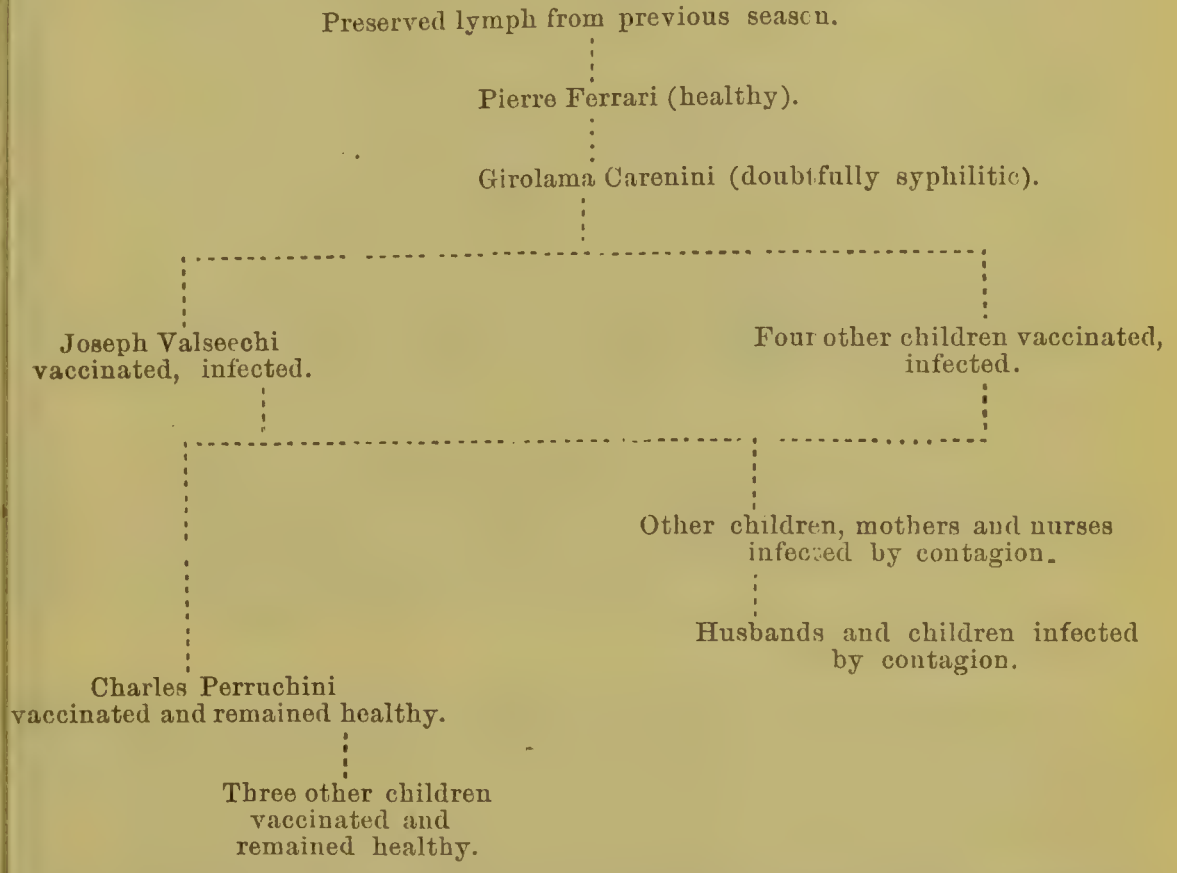
From this child, Girolama, six other children were vaccinated on the fifteenth of May (eighth day), and out of the six, five were infected with syphilis; but the vaccinator could not recollect whether the one which escaped infection was vaccinated first or last. In the case of the five infected, it is stated that the fall of the crusts was delayed, and that indurated ulcers replaced them, which were followed by secondary symptoms, which were in no case typical, but left copper-colored stains. About the same time mucous patches appeared, and the mothers and nurses were infected, and imparted the disease to their husbands. The disease spread also by contagion to brothers, sisters, aunts and cousins.

Altogether there is a record of twenty-three persons whom these children infected. One of the infected children, Joseph Valsecchi, aged five months, who infected altogether five other persons, was selected on May 23, for supplying lymph for the vaccination of five other children. It took upon all. In four of the five the healing of the pustules is said to have been rather tardy, and there was some alteration in the form of the cicatrices, and in two, there had occurred a cutaneous eruption, which got well of itself and did not affect the general health.

One of these five, Charles Perruchini, served for the vaccination of three more children, who remained perfectly healthy, only one of them presenting the cicatrices a little elevated in the middle!

These cases render it evident that the two viruses, that of vaccinia and that of syphilis, at the same spot, may both, one after another be developed there.

GENEALOGICAL SCHEME OF VACCINO-SYPHILITIC INOCULATIONS—BERGAME OR TORRE DE BUSI SERIES.



M. Adelasio records an additional instance of infection that happened at Almé, in the same province as Bergame, in September, 1863.

VACCINO-SYPHILITIC INOCULATIONS—AURAY SERIES.

The account of this series is given by M. De Paul. (Bulletin de l'Académie Imp. de Méd., t. 32, No. 9, p. 201.)

The first intimation of the occurrence was received by M. De Paul from Drs. Closmadeno and Denis, of Auray, who accompanied M. De Paul in his visit to the place three months afterwards, and some additional facts were obtained by a member of the Academy, M. De Kergaradec. It appears that a mid-wife, named Madame Françoise Lemouel, an experienced vaccinator, was the vaccinator of the series. She received, on May 20, 1866, some dry lymph from the Prefecture at Vannes, with which, on the next day, she vaccinated two children, in excellent health, named Mahé and De Norcy. Mahé, when visited by M. De Paul, in August, was aged fifteen months, and had *two ordinary cicatrices* on the right arm and three on the left. A little indolent axillary adenitis existed on both sides. According to the account given by the family, he had been very ill during the five weeks succeeding the vaccination, and the pustules had suppurated during seven weeks. At the time of the visit, however, he was very well in health, although he had not undergone any specific treatment, and his mother had not suffered in any way.

Jean Maire De Norcy, aged ten months, had, like the preceding child, been suckled by his mother. He was a large and fat child, and appeared in good health. He had on each arm two normal scars, only still a little

red. He also had, on both sides, a little indolent axillary adenitis, cervical adenitis, but no eruption or other affection of the skin. The mother had not suffered in health; but, according to her and her husband, the child had been very ill for at least two weeks after the vaccination, the pustules suppurating during all that time. An eruption, which they called "measles," had appeared three weeks after vaccination.

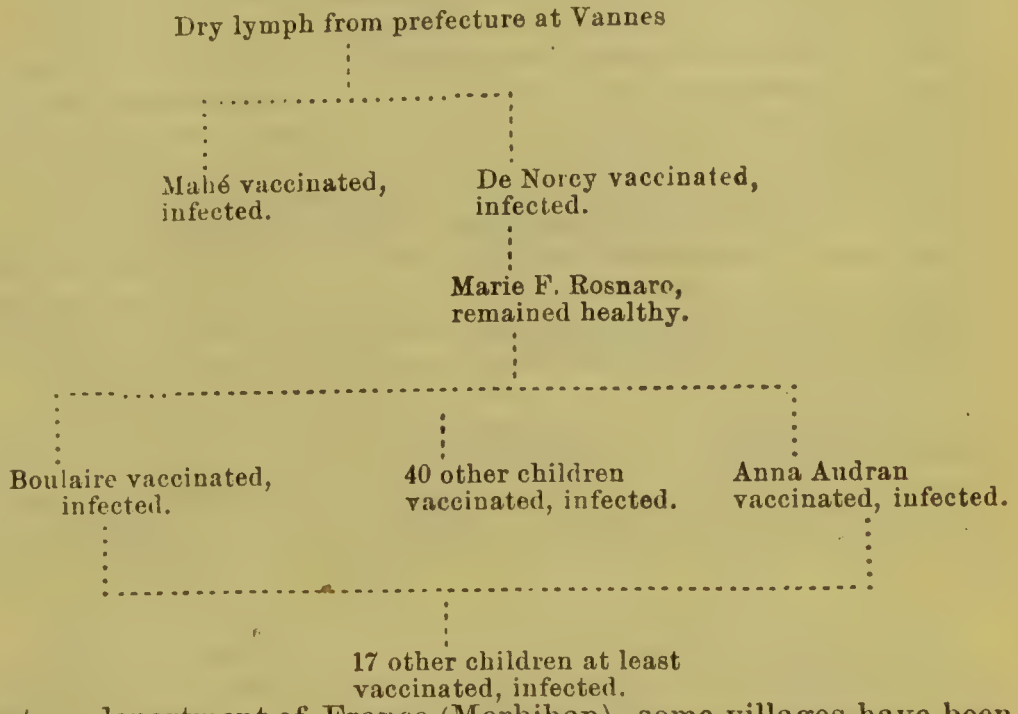
DeNorcy was used as vaccinifer on the eighth day for the vaccination of Marie Françoise Rosnaro. She presented on August 20, on each arm, six cicatrices, perfectly normal both in size and color; no trace of adenitis, cervical or axillary, and no eruption upon the skin. In a word this child was completely healthy, and in excellent general condition. Her mother, at the time of the visit, was in bed with rheumatismal pains, but M. DePaul could find nothing suspicious about her, and her nipples were free from disease. The father of the child also was found free from all syphilitic infection.

This child Rosnaro, was selected as vaccinifer for the next batch of vaccinations, of which more than eighty were made on the third, fourth and fifth of June. A list of forty-two children who suffered from syphilis, having been vaccinated from Rosnaro is given by M. DePaul; they suffered as usual, from primary ulcers at the seat of the vesicles, followed by various secondary affections. Two of them were used as vaccinifers, and their history is as follows:

Boulaire, a girl aged seventeen months, when seen in August, had fallen away a great deal, and had all the aspects of the syphilitic cachixia. There were two violet-colored cicatrices on the left arm, one upon a very manifestly indurated base, and three similar on the other arm; indolent axillary adenitis on both sides, a little posterior cervical adenitis and general roseola. The other, Anna Andran, aged nineteen months, was still suckled by her mother. There were three cicatrices of a violet tint, and reposing upon a somewhat indurated base on the left arm, and three on the right; axillary indolent adenitis on both sides, considerable on the right; axillary adenitis on both sides, considerable on the right, but less on the left; posterior cervical adenitis and general roseola.

From these children, Boulaire and Andran, a large number of vaccinations were done, certainly less, however, than from Rosnaro. M. Depaul, however, only succeeded in seeing and examining seventeen of them, and three of these seem to have had nothing amiss with them after the vaccintion, but the rest exhibited phenomena similar to those observed in Boulaire and Andran.

ENEALOGICAL SCHEME OF VACCINO-SYPHILITIC INOCULATIONS—AURAY SERIES.



In a western department of France (Morbihan), some villages have been he theatre of severe syphilitic symptoms in more than thirty children, vho had all been vaccinated from a little girl with six punctures on each rm, the child herself having been operated upon from another who had been vaccinated from lymph preserved between two plates of glass obained from the authorities. This misfortune created so much sensation, hat the Academy of Medicine of Paris sent down two commissioners. Messrs. Henry Rogu and Depaul. These gentlemen presented their report o the Academy, and this important document ends with the following considerations:

1. Several of the children whom we have examined were undoubtedly suffering from secondary syphilis.

2. We see no way of explaining this contamination but by vaccination, and we are confident that the cases we have seen were really syphilis engendered by vaccination.

3. As to the origin of the virus, it is very probable that the poison is traceable to the lymph, preserved between two pieces of glass, supplied by the authorities.

As primary symptoms were also observed among the children M. Ricord begged the commissioners to insert that fact in their report, which these gentlemen agreed to do. Here we unfortunately have again repeated the sad occurrences which took place at Rivalta (Italy), a short time ago.—(Medical News and Library, 1867—from London Lancet, December 15, 1866.)

The experience of the Confederate surgeons, establishing the possibility of communicating constitutional syphilis by vaccination; the experiments of Waller, Pelpizzari and others, establishing the possibility of communicating secondary syphilis by inoculation of the blood from patients suffering with the constitutional symptoms of this disease into healthy individuals; the cases collected by M. Viennois illustrating the transmission of syphilis by vaccination; and the unfortunate tragedy of Rivalta in the

district of Piedmont, Italy, where syphilis was previously unknown, (forty-six children of various ages being simultaneously attacked with well-marked syphilis, proceeding in all cases which could be properly examined from the action of vaccine virus which produced chancre on the arms, followed by buboes in the axilla, and all these children had been vaccinated directly or indirectly from a single child, who was subsequently proved to have contracted syphilis from a wet nurse, and these children transmitted the disease to a number of women, their wet nurses and mothers, and even to children who played and nursed with them, and the women so infected, in turn infected their husbands, and finally the disease yielded in all cases to the usual remedies for syphilis); these, and other similar facts, as the infection of the infant at the breast with secondary syphilis, and the communication of syphilis from the infant inheriting the disease from its mother or father, to a healthy nurse, all demonstrate the possibility of transmitting constitutional syphilis by inoculation of syphilitic blood, or vaccine virus, from patients poisoned with syphilis; and each such fact, of itself is sufficient to overthrow the dogma, that "primary syphilis alone is capable of being inoculated, and that secondary affections and the constitutional disease cannot be communicated from one individual to another, by any such means as vaccination, or the direct inoculation of syphilitic blood."

Mr. Jonathan Hutchinson, narrates no less then four series of cases in which syphilis was communicated by vaccination, in volumes 54 and 56 of the Medico Chirurgical Transactions. Such is the importance of this subject that we reproduce the observations of this distinguished surgeon, together with the report of the committee.

REPORT ON VACCINO SYPHILIS, BY MR. JONATHAN HUTCHINSON.

INTRODUCTION.

The following report contains the narrative of two separate series of cases. At the time of my first report (which was read before the society on April 25) only one of these had come under my notice, and at that time none of the patients in it had passed further than the primary stage. The discussion of this paper was adjourned for a fortnight, and during this interval the second series of cases had been brought under my notice. At the adjourned meeting I presented a report upon them, with also some further particulars regarding the first. A second appendix was presented to the society at its last meeting (June 27), bringing the narrative of both series up to that date. At that time many of the subjects of the second series had presented all the symptoms of constitutional syphilis in its most typical form of evolution, while none of those in the first had shown any constitutional phenomena which could be pronounced beyond dispute. This difference I was inclined to explain by reference to the fact that all in the first series had taken mercury, while none of those in the second had had any treatment. That this suggestion was correct has since been proved by the occurrence, in four of the first group, of secondary lesions of the most unmistakable kind.

At the request of the Council, I have remodelled my original paper, with its two appendices, and endeavored to bring all the facts of both series into a continuous narrative up to the present date. As regards the main points, the cases will, I believe, be found amply sufficient, but I am well aware that respecting some individual ones there is less detail than could have been wished. The peculiar conditions under which the inquiry has been conducted, the necessity for avoiding any steps likely to excite the alarm of the patients, and other circumstances to which I need not avert, have prevented me from keeping all the cases under such close observation as might for some purposes have been desirable.

FIRST SERIES OF CASES.

YNOPSIS.—TWELVE PERSONS, MOSTLY YOUNG ADULTS, VACCINATED FROM A HEALTHY-LOOKING CHILD—SATISFACTORY PROGRESS OF THE VACCINATION IN ALL—INDURATED CHANCRES ON THE ARMS OF TEN OF THE VACCINATED IN THE EIGHTH WEEK—TREATMENT BY MERCURY IN ALL—RAPID DISAPPEARANCE OF THE PRIMARY SORES—CONSTITUTIONAL SYMPTOMS IN FOUR OF THE PATIENTS FIVE MONTHS AFTER THE VACCINATION—THE VACCINIFER SHOWING CONDYLOMATA AT THE AGE OF SIX MONTHS.

These patients came under my observation in the seventh week after vaccination. The spicions of the vaccinator had been excited about a fortnight earlier, and he had apied to the medical officers of the Privy Council on the subject. It was on the advice Dr. Seaton that I was requested to see the patients and investigate the matter. It as with the permission, and, indeed, the suggestion, of the surgeon in whose practice occurred (the father of the vaccinator) that the facts were made known to the prossion, and I cannot help expressing here my admiration of the moral courage with hich this gentleman met a calamity which caused him the keenest distress, and of the ixiety which he displayed that the fullest use should be made of it for the public good. On February 7, 1871, a young surgeon in the neighborhood of London applied at a blic vaccine station for a supply of lymph. He was offered a healthy-looking infant four months old, then on the eighth day, and with five good vesicles. As he wished vaccinate a considerable number of persons in the same house, he preferred to borrow e child rather than, as first proposed, to charge points, and an arrangement having e n made with the mother, the child was at once taken to a private house where eleven oun g adults (shopmen and servants) were vaccinated from its arm. Four only of the ro vesicles were used, and the testimony, both of the operator and the child's mother, that more than one, and possibly all, of them bled somewhat. Finally, a tube was harged, and with the lymph thus obtained, which is reported to have looked quite ear, two persons, a father and son, residing in another house, were immediately afterards vaccinated. Thus we have a total of thirteen persons vaccinated. In all, expting one doubtful case, the vaccination was second to successful performance of the me in childhood. In the doubtful case both arms were done; in all the others, only n arm. In all, excepting one instance, the vaccination took, and the vesicles are beved to have gone through their usual stages. The patients were not under any close edical inspection afterwards, as none of them needed it, but it seems certain from their stimony that at the end of three weeks in all cases the scabs had fallen and small round catrices alone remained. At the end of a month, or from a month to five weeks, sevral of them applied for advice because the scars were again becoming sore, and at the piration of two months it was quite certain that ten out of the twelve had indurated ancres on their arms. Many of them had more than one chancre, and about half had larged axillary glands, whilst two or three suffered from febrile disturbance with roseous rash. I will append to this paper some brief notes of each of the cases, but it will e convenient for the present to restrict our attention to the general facts as to the roup, and to turn next to the vaccinifer.

FACTS AS TO THE VACCINIFER.

The infant had been seen by the public vaccinator, whose patient she was, and by the rgeon who borrowed her, and to them, to her own mother, and to those who were vacnated arm to arm from her, she bore the aspect of general health. She was remarkably ell grown, not in the least fretful, and had gone through the stages of her own vaccinion perfectly well.

On April 5, two months after the vaccination, she was brought to my house for examiation. Her mother ridiculed the idea that she ailed anything. My attention was, owever, at once attracted to a slight peculiarity in the tint of her skin and to the look f her face; and although it was strongly denied that she had ever "snuffled," yet when he was made to cry I noticed a nasal twang which was very suspicious. On having her tripped not a single spot of rash could be seen on the skin, but on inspecting the nttocks five small circular condylomata were discovered close to the anus, about which here could not be the slightest doubt. Her mother now admitted that she had been ware for a week of the existence of these sores, and had consulted a chemist about hem, who had attributed them to teething. She said they had not been present more han a week, and repeated her assurance that the infant had not seemed in the least ill. could not find in the mother herself any indications of syphilitic taint, nor obtain any

history of suspicious symptoms. She looked pale and cachectic, as if underfed. She had been married about eighteen months, and this was her first-born child. Her husband was a Frenchman and one of the Paris National Guard. I prescribed for the child some mercurial ointment, and was very desirous to keep it regularly under observation, but the mother would not bring it. A fortnight later (on April 19), I sought it out at home. The child then looked more ill than when I first saw it; the condylomata were in the same condition. It had no rash. Its head was enlarging, and its mother complained that it was wasting away. She had not used the ointment, alleging that its father would not allow her to do so. I was never able to see the father of the child, although I used every endeavor; he was evidently unwilling to be seen, and his wife positively refused to give me his address.

About the existence of constitutional syphilis in the infant at the date of my examination (two months after the vaccination) there could not be any doubt, and scarcely any as to the taint having been an inherited one. The vaccination spots presented perfectly healthy scars, and there was not the slightest reason for thinking that the disease was introduced into the child's system at the time of its vaccination. Had such been the case it is almost certain that it would now present symptoms similar to those in the patients vaccinated from it, *i. e.*, primary sores on the arm. There could be only a week's difference in the stage of the disease in itself and in those vaccinated from it. Instead of this we find the child presenting the ordinary symptoms of hereditary syphilis,—condylomata, commencing marasmus, and hydrocephalus. That a syphilitic infant should appear to be in perfect health, as far as external appearance is concerned, is by no means unusual. "It is a mistake to suppose that syphilitic infants always present a withered 'old-man-like' aspect; in many instances, although manifesting specific local symptoms, they may grow well and remain plump and fat." This occurs, I believe, with especial frequency when the child does not suffer from a skin eruption, and under such circumstances condylomata are not unfrequently the only symptom by which the existence of the tint is proved.

There can, I think, be little doubt that in this instance it was the blood, and not the vaccine lymph, which was the source of contamination.

Two of those vaccinated wholly escaped, and as they were two of the youngest on the list, and mere boys, it is very improbable that their immunity was consequent upon their having had syphilis before. In those in whom chancres occurred, nearly half of the vaccination punctures escaped. Now, I can see no other explanation of this immunity of some persons whilst others suffered, and immunity of some vaccination punctures in the same person in whom others were infected, than by supposing that the vaccine virus and the syphilitic virus were present in different fluids, and that it was possible to convey the one in all its vigor without necessarily conveying the other. It is important in reference to this point to note that the two individuals who have escaped were the two who were first vaccinated, since it is not improbable that the lymph which first flowed was unmixed with blood. I may add also that the third person vaccinated was the only one in whom both arms were done, and that one of his arms escaped whilst the second suffered. The conjecture may be permitted that it was when obtaining lymph for this patient's second arm that the operator first drew blood.

The success or non-success of the vaccination, as vaccination, seems to have had nothing to do with the induration of the scars. Some scars in which the vaccination vesicle had not "taken" became indurated, whilst many punctures which did "take" escaped. Owing to the patients not having been constantly under observation after the vaccination, there is a little uncertainty as to which vesicles were well-developed and which failed, since we are obliged to rely to a considerable extent on the statements of the patients themselves. There seems reason to believe that the vaccination failed in all the spots in only one individual, and he subsequently had several indurated chancres at the sites of puncture.

The period of incubation seems to have been very nearly the same in all the cases. Two of the patients, a father and son, noticed that their scars were becoming irritable on the same day, the eighteenth of March, a little more than five weeks after the vaccination, and between two and three weeks from the cicatrization of the vaccine vesicles. In all the patients the spots were characteristically indurated when I saw them on April 4th, exactly two months from the date of the vaccination. It would have been of great interest to science to have allowed half of this group of patients to abstain from any specific treatment, but, on the other hand, it appeared a paramount duty to adopt at once the very best means for their recovery. On the fourth of April, they all commenced, with one exception, the use of mercury in small doses, and the application of black-wash. In all the effect of the remedy upon the local sore was most definite. Many of them, at the date of my first paper, had become (after eleven days' treatment) quite soft; in the course of a week none of them displayed a degree of induration which would have been considered characteristic, and several which had been ulcerated were healed.

One important feature in this group of cases is the remarkably close similarity which they bear to each other. In no single case was there any unusual degree of inflammation

the vaccine vesicle. In all, as far as the patient's impressions go, the vesicles went through a usual course, and in all a period intervened, before the development of induration, during which the cicatrix was quite healthy. As the patients were not at the time under medical inspection it is impossible to be accurate as to the precise day on which induration of the cicatrices began, but so far as can be ascertained there is reason to believe that nine out of the eleven began to complain of inflammation of the scar towards the end of the sixth week. At the end of the eighth week these nine patients had all reached the same stage. In the other two cases the progress was about a fortnight behind hand.

The characters assumed by the sores were, with some minor differences as to size, etc., remarkably similar. Ulceration occurred in all excepting two patients, and in one of these two, out of three chancres, one did for a day or two ulcerate slightly. In one patient, a healthy, florid girl of seventeen, three glossy buttons of induration formed, but never passed into the ulcerative stage. It is not improbable, however, that they were arrested by the influence of mercury. Of those which ulcerated all took the circular form, and in all, in the first instance, the discharge was stated to have been "glutinous." They had all been dressed with water dressing for several days before I saw them, and had much improved in appearance; some of them were secreting healthy pus, but most of them still showed deficiency of secretion. None of the patients were out of health at the time of the occurrence, but they varied a good deal as to temperament and degree of vigor. There is no reason to think that any of them had suffered from syphilis before. About half of them complained that they had headache and felt more or less unwell during the time that the sores were indurating. One young man was confined to his bed with severe aching in the back, vomiting, and general febrile disturbance, all of which passed off in a few days. Most of them had more or less enlargement of the glands in the axilla, but none did it occasion any material pain or inconvenience. In all but one mercurial treatment was commenced on the fourth of April, two months after the vaccination, and about a fortnight after the scars had begun to indurate, and the uniformity with which all the sores altered in character under its exhibition was most remarkable. In the two cases in which ulceration had not occurred, the sores never passed beyond the stage of induration. The sores which were ulcerated when mercury was begun, in the course of about a week after its commencement, began to discharge healthy pus and to show florid granulations. Most of them, as already stated, were healed within a fortnight, and after three weeks the majority were quite sound and almost free from induration in all. In all cases the mercurial treatment consisted in two grains of gray powder given night and morning, with the application of black-wash under gutta-percha tissue. About half the patients showed slightly the influence of mercury on the mouth, but none were particularly inconvenienced. In one case the patient did not come under treatment till ten days after the others, having, indeed, in the first instance, consulted a homœopath. In him the chancre attained a size twice that of the largest of the others.

The following paragraphs are extracted without modification from my first report (April 25th), as I have special reasons for wishing to preserve their original form:

"As already stated, none of the patients have as yet displayed any of the persistent forms of skin rash, nor have any shown positive ulceration of the tonsils. Several of them have had transitory, but definite, eruptions of roseola, and in several the skin of the abdomen and chest is slightly mottled. Three of them to-day display about the neck, face and shoulders, a few lichenoid spots of doubtful character.

"It is to be feared that before long we shall have yet more definite evidences of constitutional contamination in some of these patients; but in the present stage I think we are quite justified in deducing the following conclusions from them:

"1st. That the blood of a child suffering from inherited syphilis can, if inoculated, transmit the disease with great certainty.

"2d. That the result of such inoculation of blood will be an indurated chancre.

"3d. That if multiple inoculations be practiced, multiple chancres may be produced.

"4th. That a period of incubation between the inoculation and the first occurrence of induration about the prick will occur, during which the part may appear perfectly healthy.

"5th. That the period of incubation prior to the first specific induration will usually be about five weeks.

"6th. That it is quite possible for vaccine lymph and blood to be transferred at the same time, and for each to produce its specific results, the effects of the syphilitic inoculation occurring subsequently to those of vaccination.

"7th. That it is quite possible to vaccinate successfully from a syphilitic infant in the stage of utmost potency as regards its blood, without communicating syphilis."

The following are some particulars respecting all the persons vaccinated in this series. The cases are arranged according to the order in which vaccination was performed:

No. 1. Master W——, a youth of 14. He was vaccinated in three places, all of which took, and went through their usual course. No ill consequences followed. On April 8, I examined his scars, and found them pale and quite normal.

No. 2. W. N——, æt. 16. Only one of three spots took. No ill consequences followed. On the eighth of April, I found the scar of the vesicle which succeeded pale and healthy.

No. 3. Mr. T. B——, æt. 20, a young man of fair complexion and somewhat delicate appearance. As he had no scars of a former vaccination, it was thought best to vaccinate him on both arms. This was accordingly done in three places on each; in two or three on each arm the vaccination took and scabs resulted. He left the establishment shortly afterwards, and at the time of my first visit I did not see him. Having obtained his address, he was subsequently induced to come to my house. This was at the end of two months after vaccination. He had then one large ulceration with indurated edges and prominent granulations in the middle. This chancre, which was as large as a florin, had resulted from the confluence of two vaccination sores. He stated, as regards the vaccination, that the scabs fell within three weeks, and that the sores then seemed quite well. During the sixth week two of the spots on his left arm inflamed and became hard, and during the following week he had a good deal of febrile disturbance. He had an enlarged but softish gland in the left axilla. Mercurial treatment* was commenced in the end of the ninth week, and continued for two months. The chancre was quite healed in about a month, but the scar remained hard and dusky. He had a few suspicious lichen spots in the thirteenth week, but nothing characteristic. He never had any sore throat, and his general health remained throughout good.

No. 4. Mary Jane L—, æt. 18. Three spots took and went through their stages. About six weeks after the vaccination all three became inflamed, and they subsequently indurated. On April 4, they were all indurated and superficially ulcerated (see sketch). There was an enlarged gland in the axilla, movable, but not very hard. During the preceding week she had had some febrile disturbance. Mercurial treatment was commenced at the end of the eighth week, and was pushed to slight ptyallism. She subsequently had some diarrhœa, and could not continue the mercury regularly. The chancres soon healed. In the thirteenth week she reported that she had a rash, which came and went, but I never saw anything positive. She was of strumous diathesis, and a large glandular mass in the neck, which had shown itself in the eighth week, persisted ever afterwards. In the middle of July, all specific treatment having been suspended for more than two months, she had a rash on the neck, fronts of arms, etc. It consisted of small, slightly scaly papules, of dusky color. She had also symmetrical ulcers in the tonsils. Mercurial treatment was at once recommenced, and the rash soon began to fade. She was seen a few days later by the Society's Committee. On August 1, all traces of the rash had disappeared, but the ulcers in the tonsils persisted. On September 4 she was seen by Mr. Smith, secretary of the committee. At this date she had no rash, but the ulcers in the tonsils were still characteristic.

No. 5. Caroline R——, æt. 24, stout and florid, was vaccinated in three spots, two of which took slightly and one well. After they had been for some time soundly healed, they relapsed about the twentieth of March and became red and irritable. She had at this time backache and flying pains. There was no swelling in the axilla. Mercurial treatment was commenced at the end of the eighth week, and was pushed to decided salivation at the end of ten days, after which she took only one pill daily. At the end of a month the sores were all healed and the scars soft. She had on several occasions shown a few suspicious spots about the neck, but characteristic, and she had had no sore throat. Throughout she had complained a good deal of rheumatoid, etc., but she kept at her work. In the middle of July, at the same time as in the preceding case, a characteristic rash attended with ulcers in the tonsils showed itself. Mercury, which had been suspended for two months, was resumed, and the rash soon disappeared. On the first of August she was quite well, with the exception of two or three spots which persisted on her neck. In the beginning of September, she had a relapse of ulceration in one tonsil, but it was very slight. Her general health at this time was good.

No. 6. Annie W——, a florid, robust girl, æt. 17. The three vaccination spots took well, went through their normal stages, and healed. On April 4 (eighth week) the outer one showed slight induration, but was not in any degree ulcerated. The other two were reddened, but not at all hard.

She said they were redder than they had been a week before, and that they were beginning to itch. She felt perfectly well. Three days later all three spots had become slightly harder. None of them ever passed into open ulcers, and under mercurial treatment all induration disappeared in the course of three weeks. I believe she took the mercury afterwards very irregularly. No constitutional symptoms of any kind ever showed themselves.

*By "mercurial treatment" throughout this paper may be understood the careful use of black-wash applied to the sore three times daily, and protected with oil-silk, and the administration internally of two grains of gray powder twice or three times a day, according to circumstances.

No. 7. Lucy L——, æt. 20. All the four vaccination punctures took well, and healed in ie course. Nothing followed until the last days of March (beginning of eighth week), hen the two inner spots became red, hard, and irritable. On April 4, the two outer scars ill showed no sign of irritation, but the two inner ones were of a dusky red, somewhat ised, hard, and covered with thin epidermit scale. She complained that they felt sore. ie had no other symptoms. No axillary bubo. In this case the chancres never ulcerated. nder the influence of mercury the induration disappeared. For a short time in the uth week her tonsils were suspiciously inflamed, but she never had any rash. Cod liver l was given most of the time, as she was in delicate health, and had a cough.

No. 8. Mr. T——, æt. 20. Three vaccination places took, and the fourth did not. hese scars remained quite sound until April 1, (eighth week). I saw him on April 8, and und one of the scars inflamed, slightly hard at the base, and covered with a scab. The her three were quiet. He said that he felt well. There were some hard glands in the xilla. Mercury was at once commenced, and the sore, which had ulcerated, soon healed, he mercury never produced any ptyalism, and, excepting a little headache, he felt quite ell throughout. On the fifth of May the scar was sound, but still hard, and the glands the axilla could still be felt. My notes mention "some small spots on neck and oulders, fairly characteristic." The spots alluded to had disappeared at my next visit. e subsequently remained quite well until the middle of July, when he had a general seolous eruption, which, however, disappeared in a week, when mercury was resumed.

No. 9. Mr. H——, æt. 22, of fair complexion and delicate. Lymph was inserted at ree places, and good vesicles developed at two. They all healed well, but about March the inner one began to inflame. On April 4, when I saw him, he complained of hav- g felt dull and heavy during the last week. The spot, which had inflamed, was raised nd hard. On each tonsil there was a slightly marked patch of suspicious appearance, ut not actually ulcerated. Mercury was commenced at this date. The chancre soon ealed. The throat was slightly sore for about a week, and after this, excepting some mplaint of frontal headache, he had no symptoms. On May 5, the chancre, which had een healed for more than a week, scarcely showed any induration. He felt quite well, nd had no rash. Mercury was continued once a day for a month longer, and then isused.

No. 10. Mr. W——, æt. 18, a rather delicate young man of dark complexion. He was accinated in three places, but none of them took. The inner one inflamed a little, but oon healed. On the twenty-second of March the inner one had again inflamed, and was ecoming hard. On April 1 he felt ill, had backache, thirst and headache; and on the econd a succession of slight rigors, with frequent sickness, came on. When I saw him, n April 4, he was in bed, on account of his backache and feverishness. There was an nlarged gland in his axilla, and the skin of his abdomen was a little mottled. Only ne of the vaccination spots was affected, and it was exactly like those in the other ases—raised, hard and inflamed. Nothing could be seen on his tonsils. On April 8 he as much better, having lost his backache. He stated that on the seventh his body and ace were covered with a blotchy rash, but, with the exception of a very slight mottling f the abdomen, this had disappeared on the eighth. On the fifth of May he had conges- ion of the right eye and circumorbital pain, but no positive irritis resulted. At the ame time he had a lichenoid eruption on shoulders, arms and face, but as it was mixed ith acne, to which he had been previously liable, it was not easy to be confident as to ts character. On account of diarrhœa, the mercury had been omitted.

No. 11. Mr. W——, aged 45, a married gentleman, the father of a healthy family, and who had never, at any time, suffered from syphilis. He was vaccinated in three places, wo of which took, went through their stages and cicatrized. The middle one of the hree did not take. On or about March 18, all three inflamed, and when I saw them, on pril 4, they were all indurated and ulcerated. He had no enlarged glands, nor any other ymptom. On April 8, his condition was much the same; he was taking mercury wice a day; the thermometer had been used regularly, and had not shown any elevation f temperature. On the 11th, the mercurial was omitted, as he was decidedly salivated. n the 14th, two of the sores were quite healed, and the other showed healthy granula- ions. After this he continued the liberal use of black-wash, but took no more mercury nternally. From the 10th to the 24th, his mouth was slightly sore, and the mercurial dor was perceptible in his breath. Subsequently, he remained quite well as regards yphilitic symptoms until the latter end of June. We had sent him to the seaside, as he ad not regained quite his ordinary strength. Whilst there he rapidly improved, but a opious eruption came out on his scrotum, thighs and scalp. He thought it had been xcited by bathing. He returned to town three weeks later, and I saw him in the mid- le of July. His scrotum, penis, and the inner sides of his thighs, were covered with flat- opped papules and patches of psoriasis of the most characteristic kind. He had no rash worth mention on other parts of his body, but his scalp, which was bald, was covered vith small patches of porrigo. Under the use of mercurial ointment and small doses of nercury internally, both the scrotum and scalp rapidly healed.

No. 12. Mr. W——, Jr., æt. 18, son of the subject of Case 11. He was of brown complexion and in tolerable health, but had been for years the subject of enlarged tonsils. Three out of four of his vaccination spots took, went through their usual stages, and healed. On the eighteenth of March, two of the three spots which had taken became a little inflamed and irritable, and during the next week they gradually indurated. He consulted his surgeon about them on the 24th, and on April 4 I saw him. The outermost of the three spots then showed a healthy cicatrix, but the inner and middle ones were inflamed, slightly raised, superficially ulcerated, and decidedly indurated at the base. He had no other symptoms. No definite glandular swelling. Mercury was prescribed, and under its influence the sores softened and healed. He was never positively salivated, but the occurrence of slight diarrhœa several times interrupted the mercurial course. Up to the present date he has not had any secondary symptoms, with the exception of a doubtful roseolous rash in the beginning of May. He took mercury in all for about a month.

SECOND SERIES OF CASES.

Synopsis—Unquestionable Symptoms of Constitutional Syphilis in Nine Children who had been Vaccinated from the same Patient—Suspicious Symptoms in Six Others, and Entire Escape of a Certain Number—Vaccinifer a Fine Healthy Looking Child, but with Slight Local Symptoms Indicative of Inherited Syphilis.

On May 5, 1871, two children were brought under the care of my friend and colleague, Mr. Warren Tay, on account of syphilitic eruptions. They were a brother and sister, aged respectively four years and sixteen months, and in both the syphilitic rash was very definite. In searching for its cause Mr. Tay found that about seven weeks previously they had been vaccinated, and that the vaccination spots were at the present time unhealed, and with very decided induration at their bases. Mr. Tay now brought the cases to me, and I am indebted to his courtesy for permission to investigate the facts respecting them, and also for much help in doing so. We obtained from the mother of the children the name of the vaccinator, and on application to him were at once supplied with his vaccination register, and allowed to copy out the names and addresses of twenty-four other patients who had been vaccinated at the same time from the same vaccinifer. Nothing had occurred to excite the vaccinator's suspicions, not a single one of this series having been taken back to him on account of the unhealthy condition of the arm. On making inquiries at the houses of the patients, however, we found that no fewer than nine had chancres on their arms, and that six were suffering from well-marked and copious syphilitic rash. Two of them had been under medical care for these symptoms, but not in a single case had the real nature of the disease been suspected. I will state *seriatim* the chief facts respecting these cases in this series, but it will be convenient first to mention those which concern the vaccinifer.

HISTORY OF THE VACCINIFER.

I visited the child at its home, the parents having no knowledge of the object of my visit. I found it a stout, well-grown male infant, of seven months old. Thus, he would be four months old at the date of vaccination. His mother stated that he was selected as a vaccinifer from amongst several others, as being the most healthy present, and that his vaccination spots were very good ones. They healed afterwards quite well, and the scars remained sound. He still looked healthy, and was well grown and cheerful. Excepting a little transitory "tooth-rash," probably lichen, on the face, he had had no eruption. His head was decidedly large, and the fontanelles widely open. This had, his mother said, only been noticed for a few weeks. Latterly, several neighbors had told her that he had "water on the brain." I inquired as to snuffles, and she replied at once and emphatically, "Yes, he has snuffled a great deal." There was no trace of rash in the child's skin at the time of my visit, but at the anus was a single small condylomatous patch just healing. This had never attracted his mother's attention. He was said to have had thrush. His mother was a young and healthy-looking woman, who had been married two years. I did not, of course, ask her any direct questions.

Immediately afterwards I called on the father of the child, and in answer to a direct question, he denied very positively having ever been the subject of venereal disease. On a subsequent occasion he submitted to a personal examination at my house, and we

failed to detect anything of a nature to cast suspicion on his denial. I saw the infant two or three times during the next six weeks, but no symptoms of a more definite character showed themselves. The condyloma soon healed, and, with the exception of a slight tendency to hydrocephalus, the infant at the time I last saw it might have been regarded as a specimen of excellent health. As regards its condition at the date of vaccination, I may state that the parents of several of those vaccinated from it subsequently mentioned to me its very healthy appearance.

No trustworthy evidence could be obtained as to whether blood was or was not transferred in the act of vaccination. The vaccinator, who is a very able and careful surgeon, assured me that it was his custom to avoid blood-stained lymph, and several of the women who witnessed the proceedings told me that they did not observe any bleeding. In addition to the number of children vaccinated directly from its arms, some tubes were also charged with its lymph. These tubes, having been mixed with others, could not be traced.

The following are the particulars of all the patients vaccinated from this vaccinifer:

No. 1. Arthur Edward T——, æt. 16 months, one of those first seen by Mr. Tay. He had been vaccinated for the first time on February 13, and five of the punctures were successful. The spots healed, but subsequently became hard. When he applied to Mr. Tay, in May, the scars were decidedly indurated, but not ulcerated; there were enlarged glands in the axilla; he had symmetrical ulcers on the tonsils, and a moderately copious rash of mixed roseola and psoriasis on the trunk and limbs. He was treated by mercury, and his symptoms slowly disappeared.

No. 2. Elizabeth T——, æt. 4 years, sister of the above patient. She was vaccinated for the first time at the same date, and five of the punctures took well. They went their usual stages and healed. Afterwards the scars inflamed and ulcerated. When she was seen by Mr. Tay on May 5, she presented superficial sores with slightly indurated bases, and covered with a good deal of scab on the seat of the vaccination scars. The glands in the armpit were enlarged. She showed deep symmetrical ulcers on the tonsils nearly healed, and she had a copious rash of papules and small scaly patches on the body, the color, arrangement, and general appearances of which were most characteristic. This eruption was most symmetrical, and occurred especially on the back of the neck, the bend of each elbow, and the thighs and hips. Under mercurial treatment the chancres healed and the rash disappeared.

No. 3. William C——, æt. 10 years. His was a second vaccination, but three of the punctures were followed by good vesicles. The vaccination spots were healed. He became the subject of rheumatoid pains, and had a copious rash over the whole body. When seen by me at the end of thirteenth week he had already been for several weeks under medical treatment. The vaccination chancres were just healed, but were still inflamed, indurated, of a dusky red color, and covered with a dry papery scab. There was a gland as large as a walnut in the axilla. Each tonsil showed a well-marked gray-based ulceration. The rash, although evidently fading, was still abundant. It occurred symmetrically on the neck, arms, trunk, and thighs. It was copious both on the backs and fronts of the arms, especially so on the outsides of the thighs.

No. 4. Eliza T——, æt. 14, a re-vaccination; four or five of the punctures took; the crusts fell in about a fortnight, and the scars remained sound for three weeks afterwards. Five weeks after vaccination they inflamed and became hard, and "a white skin came over them," but they never reulcerated. She had a painful lump in the armpit during the first week after vaccination, but it subsequently disappeared. During the twelfth week she first noticed an eruption on the chest, and at this time she had some cough and felt ill, as if she had taken cold. She was now placed under the care of a surgeon. I first saw her on May 17, the first day of the fourteenth week. At that date her vaccination spots were soundly healed, but the scars were dusky and covered with a papery scale; none of them were indurated. There was a slightly enlarged movable gland in the armpit. She had symmetrical ulcers in the tonsils, with white borders. There was a sparing eruption of dusky lichen spots on her chest, chiefly below the nipples. There were a very few spots also on the chest and upper part of the neck, but none on the arms. Up to this date the patient had taken no mercury.

No. 5. Maria H——, æt. 3; a first vaccination; four punctures took. When visited in the fourteenth week she was found to have symmetrical ulcers in the tonsils, a slightly enlarged gland in the axilla, and an eruption of dusky psoriasis on the back and outer sides of the thighs. One of the vaccination scars was slightly indurated and dusky, with a thin papery scale; the others were sound. The rash had only been noticed for a few days. The child had been for some time under the care of a surgeon for "inflammation of the lungs." Up to this date the child had taken no mercury, and the treatment afterwards was conducted with extreme irregularity. On September 6, after an interval of two months, during which the child was lost sight of, it again came under care on account of condylomata at the anus.

No. 6. Eliza M——, æt. 17; revaccination, four places took. On May 16, end of the thirteenth week, the sores had only just healed, and their scars were slightly indurated,

dusky, and covered with a dry scale. There was a slightly enlarged gland in the axilla, and she had a few scaly papules of dusky red color on the upper parts of the legs, but none elsewhere. She was florid and in good health.

No. 7. This patient, Hannah S——, was not found.

No. 8. Elias W——, æt. 1 year; a first vaccination; four punctures took. At the end of the twelfth week the sores were not healed, but were covered with porrigo scab. There was, however, no evidence of syphilis, and the child had been the subject of porrigo before vaccination.

No. 9. Mary Anne O——, æt. 11; a re-vaccination; five places took. The sores healed very slowly, and had only just closed at the end of the thirteenth week. Their scars were then dusky and red, with a thin dry scale and slight induration. There were a few dusky papules on the back of her neck, and one in front of the right elbow. The patches were either smooth and glossy, or covered with a thin scale. There was a large indolent swelling in the axilla. The child had not been out of health, and no treatment had been adopted.

No. 10. Amelia O——, æt. 5 years; first vaccination; five places took. The sores healed in about five weeks, and the scars, when examined, at the end of the thirteenth week, were scaly and somewhat congested, but not indurated. The axillary glands were slightly enlarged. She had no eruption excepting some patches of dry eczema on the face. It is probable that she was not syphilitic.

No. 11. Frances C——, æt. 4 years. I do not know more respecting this child than that the vaccination sores healed slowly, and that during the eighth week she had a rash of red pimples. She was not seen.

No. 12. Alice C——, æt. 5½ years, sister of the above. Facts as to vaccination very similar.

No. 13. Henry C——, æt. 8 years, brother of the above. On May 8, end of twelfth week, two or three of his vaccination spots were still unhealed and covered with porrigo scab. He was reported to have had a rash like his sisters, but neither in him nor them was there anything positively syphilitic.

No. 14. Emily Julia J——, æt. 6; first vaccination; five places took. The places healed up at the end of the third week, but subsequently inflamed and reopened. On May 17, fourteenth week, the four lower spots were healed, but hard, glossy and dusky. The upper one was covered with a dry pus-scab, and its base, as large as a shilling, considerably indurated. She had an enlarged gland on the border of the axilla. The lower part of the chest, the whole of the abdomen and the back were covered with a lichenoid rash, and there were a few spots on the front of the elbows and on the thighs. The rash had probably been out about a fortnight. There were symmetrical ulcers in the tonsils, and she had been low-spirited and ailing. Mercurial treatment, one grain of gray powder twice a day, was commenced on the seventeenth. On the thirtieth, all traces of the rash and of the ulcers in the throat had disappeared, and she was in good health. The vaccination scars were still dusky and somewhat indurated.

No. 15, Alfred J——, æt. 9, and brother of the above. A first vaccination; five places took, and all healed during the third week. They afterwards inflamed and reopened. In the beginning of the fourteenth week the scars were dusky, and there was an enlarged gland in the axilla. He had no rash of a positive character, but a suspicious mottling of the skin of the abdomen.

No. 26. Annie J——, æt. 3 years, sister of the above. All the four vaccination punctures healed well in the usual time, but subsequently reopened. An abscess formed in the armpit and broke. It was said that she had scarlet-fever soon after the vaccination. At the beginning of the fourteenth week all the sores were well healed, but the scars were slightly dusky. She had no rash.

A young woman who was vaccinated from this child suffered no ill consequences.

No. 17. Herbert D——, æt. 5 years. In this case nothing unusual occurred.

No. 18. Alfred George H——, æt. 1 year. In this, as in the preceding, the vaccination was successful and without any untoward remit. Both of them were first vaccinations, and in each some places took.

No. 19. Eliza C——, æt. 16 months In this instance the vaccination, first, was not successful, but nothing followed it.

No. 20. Rose Jane B——, æt. 3 months. I did not succeed in obtaining any information about the child, and the same remark applies to the three following cases.

No. 21. Rosina T——.

No. 22. Daniel C——.

No. 23. John C——.

No. 24. Caroline W—, æt. 13 years; a revaccination; three places took. The sores never quite healed. About the fifth week they inflamed considerably. An abundant eruption appeared in the eighth week, and at the same time she failed in health, lost her appetite, and had pains in her limbs. When seen in the beginning of the fourteenth week she had a large open sore on her arm, with indurated edges, and prominent florid granulations in the center. This sore was formed by the coalescence of two; a third was

healed, but indurated. She had symmetrical excavated ulcers in the tonsils, and enlarged glands in the axilla and back of the neck. She had a copious eruption of dusky flat-topped papules, occurring on almost all parts, excepting the face, and there was also a single, round, condylomatous patch on her tongue. A sketch of her arm was taken on May 19, and on the same date she was seen by many surgeons. Mercurial treatment was commenced on May 17. On May 31, she was rapidly getting well, the rash having almost disappeared and the sore being nearly healed. On June 21, the sore on the arm was healed, but its scar was dusky and covered with scales; the only constitutional symptoms which remained were a few spots on the neck and the condyloma on the tongue. Subsequently this child got quite well, but she had to take mercury for more than two months. Towards the end of July she was again under care for a small condyloma at the anus, but it soon disappeared under treatment.

No. 25. Harriet W—, æt, 15 years; revaccination; successful; no ill consequences.

No. 29. John R—, æt, 8 years. A successful first vaccination. No ill consequences.

REPORT OF A SUB-COMMITTEE OF THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY ON SOME OF THE CASES RELATED BY MR. HUTCHINSON IN THE PAPERS READ AT THE MEETINGS OF THE SOCIETY ON APRIL 25 AND MAY 9, 1871.

On May 16, 1871, we saw, in company with Mr. Hutchinson, the following cases:

The vaccinifer of the first series of cases reported on April 25, and three persons (Cases 1, 2 and 3) who were vaccinated from this child.

Vaccinifer (No. 1), female, æt. 7 months. Had been used on February 7 for vaccinating the series of cases reported by Mr. Hutchinson on April 25.

This child is hydrocephalic; its head is much elongated and widened posteriorly; the fontanelle is somewhat more open than usual. It is pallid, but not unhealthy looking. There are five marks on the left arm from vaccination, which are quite healed. No eruption can be seen anywhere; the anus and genitals are quite clear, but the mother states that there were sores on the latter after vaccination. The glands in both groins are large, and can be very distinctly felt.

The *mother* is rather pale, but looks healthy, and declares she has always been so. This is her first child.

The following persons were vaccinated from the preceding case on February 7, and presented on May 16 the following features:

Case 1.—Female, æt. 17, No. 6 in Mr. Hutchinson's first series; a hearty, robust, plump girl, with bright color. Has, in a horizontal line, three vaccination marks on the left arm, the outer of which is not yet healed; the base of this sore is very slightly thickened. Mr. Hutchinson states that this girl has been living at home with her friends, and taking her medicine very irregularly.

Case 2.—Male, æt. 18, No. 10 in Mr. Hutchinson's first series. A dark-complexioned, strumous-looking lad. Has three cicatrices on his left arm, which present nothing different from recent vaccination marks. There are a few scattered spots of acne on the shoulders and upper part of chest.

Case 3.—Male, æt. 19. A healthy-looking lad. Has an unhealed ulcer, larger than a shilling piece, on the right arm, resulting from vaccination. The sore is covered by a crust, which is disposed to scale slightly, and its base is leathery. Nothing else can be detected.

Mr. Hutchinson states that this is the last case of the series which had been traced, and therefore treatment was commenced later than in the others. He also informs us that in the above three cases the vaccination sores all healed, and subsequently ulceration set in at some of them, which continued to spread slowly until mercury was given, when in about ten days they commenced to heal. Black-wash was applied locally. The same sequence of events had occurred in all the other cases of this group that we had seen.

From the foregoing account, it will be seen that neither the vaccinifer, nor any of the three cases vaccinated from it, presented any symptoms of constitutional syphilis at the time of our examination. But, whilst in Case 2 the vaccination sores were healed, leaving nothing but the ordinary scars, in Cases 1 and 3 there were still open ulcers at the site of the vaccination fourteen weeks after its performance. These ulcers were of a suspicious but not of a conclusive character.

Of the second series of cases reported by Mr. Hutchinson we have seen the vaccinifer (No. 2), and three children (cases 4, 5, 6), who were vaccinated from it.

Vaccinifer (No. 2), male, æt. 7 months. Had been used on February 13 for vaccinating the series of cases reported by Mr. Hutchinson on May 9, and brought under his observation by Mr. Warren Tay.

This child is hydrocephalic; its head is universally enlarged; the fontanelles are perhaps more open than usual. It is a pallid delicate-looking child, and has a slight herpetic eruption on the forehead, but is very lively. It breathes hard through the nose; the mother says it has a cold and is teething. There is a small white scar at the anus, as if from an ulceration. The glands in both groins are large and separate. On the right are five vaccination marks, which are healed.

The *mother* is a bright-complexioned, healthy-looking woman and has never suffered from illness. This is her first child. She has never had a miscarriage, or discharge, or sore nipples. She says the child has been occasionally nursed by the landlady and her children. She knows that one of these was ill, and was sent into the country for its health, and the mother had attended a hospital, but she never heard what was the matter with either of them.

The *father*, æt. 36, cabinet-maker, is a spare pale man, but apparently in health; he has worked thirteen years in the same situation. He denies having had venereal disease of any kind, and readily submitted to examination without previous preparation; nothing could be found except some enlarged separate glands in the left groin, and a slight white scar on the inside of the cheek, opposite the left molar tooth. The only illnesses he has ever had are measles and whooping-cough.

The following cases, which had been vaccinated from this vaccinifer on February 13, presented the appearances detailed below on May 16, thirteen weeks afterwards:

Case 4.—E. T.——, a girl, æt. 4½. No. 2 in Mr. Hutchinson's second series of cases, a pallid, thin, strumous-looking child. On the right arm are two sores covered by crusts; the larger of these has a circumscribed thickened base, which is superficial, and has a leathery feel when compressed; the surface of

this is disposed to scale. The glands in the corresponding axilla are enlarged. There is a scaly eruption, consisting of small, circumscribed, for the most part circular, spots of a coffee-color at the back of the neck, the lower part of the abdomen, and the upper and outer part of the thighs, with a general scattered mottling of the trunk, on its anterior surface especially. The inguinal and post-cervical glands are large and indistinct. Both the tonsils are excavated, but not now ulcerated.

CASE 5.—A. E. T——, a boy, æt. 18 months, male, No. 1 in Mr. Hutchinson's series, a fat, well-grown, hearty-looking child. On the left arm are two dusky-colored marks of vaccination, which are scaling on the surface, but not ulcerated; these have a thickened base, precisely similar to the preceding case. There is a general mottling of the trunk, which is fading, and a few small scaly spots, resembling those in the foregoing patient, scattered over the abdomen. The glands in each groin are very distinct. There is well-marked ulceration of both tonsils.

The *mother* of these children is a healthy-looking woman; she has never suffered from illness; a rigid cross-examination failed to elicit any history of previous syphilis in herself or either of her children.

CASE 6.—W. C——, æt 10, a boy, No. 3 in Mr. Hutchinson's second series. This case was not reported at the Medical and Chirurgical Society. A spare lad, but not unhealthy in appearance; his mother says he has lost much flesh lately. On the left arm the cicatrices of vaccination in infancy show plainly, and below these are two large sores covered with crusts with well-defined, thickened, circumscribed bases, surrounded by a dusky areola. The glands in the corresponding axilla are enlarged. The inguinal and post-cervical glands are very perceptible to touch. There is a scaly eruption, for the most part in small annular patches, over the trunk and limbs, which is fading. On each tonsil is a deep, vertical ulcer, with a gray, unhealthy surface.

The *mother* is a tall, healthy-looking woman; she has never had any serious illness, and no history of previous syphilis in herself or her boy can be obtained. These three cases were vaccinated on the same day, and the ulcers resulting have never healed, but have slowly increased in size. There has been no treatment in any of them.

In our opinion, these three cases present unequivocal evidence of constitutional syphilis, and we see no reason to doubt, from the appearances presented by the arms and from the history of the cases, that the disease had been conveyed by vaccination.

As to the method in which vaccination was performed in these cases, and the character of the fluid inoculated, whether lymph, blood, or both, we could obtain no satisfactory evidence; and with regard to this question, we may refer to the remarks made by Mr. Hutchinson in his paper, where such facts as could be elicited are recorded.

[Signed] SAMUEL WILKS,
WM. S. SAVORY,
GEO. G. GASCOYEN,
THOMAS SMITH.

The following case was shown to Dr. Wilks by Mr. Hutchinson, on May 19, being one of the same series

CASE 4.—Female, æt. 14. No. 4 in Mr. Hutchinson's second series. There was a round red sore on the arm, raised and granulating. Over the body and arms was a well-marked eruption of bronze-colored, scaly, raised, spots. The tonsils were swollen and slightly ulcerated.

[Signed] SAMUEL WILKS.

SECOND REPORT ON CASES OF VACCINO-SYPHILIS.

The following cases—belonging to the first series reported by Mr. Hutchinson on April 25—were seen by us on August 1, 1871, with Mr. Hutchinson and the medical attendant. They were vaccinated February 7 from vaccinifer No. 1; all have been, and still are, taking mercury; in one or two of them the gums are slightly reddened. They belong to the group first described in the previous report, so that eight of that series have been seen by the committee.

CASE 1.—C. R——, female, æt. 26, No. 5 in Mr. Hutchinson's first series. A plump, robust woman, with fresh color, is apparently in perfect health. On the left arm are the cicatrices of three vaccination marks, which are quite healed; they are of a dusky brown color, but opinions differ as to whether they are darker than usual. There are three or four scattered spots of acne on the chest and back. The throat is sound. Mr. Hutchinson states that this patient has never had a characteristic rash.

CASE 2.—M. J. L——, female, æt. 18, No. 4 in Mr. Hutchinson's first series. A pale, delicate-looking girl, but does not appear to be out of health. There are three cicatrices from vaccination in a horizontal line on the right arm, which are quite healed and somewhat dusky in color. The glands beneath and behind the angle of the left lower jaw are enlarged, forming a mass which extends over the parotid region and downward into the neck. There is one enlarged gland at the back of the neck on the right side. In each tonsil is a vertical, excavated, unhealthy-looking ulcer. At the bend of the right elbow is one red spot which is scaling, and another less distinct on the left arm at the same situation.

CASE 3.—C. T——, male æt. 20, No. 8 in Mr. Hutchinson's first series. A short but rather thick-set man of fair complexion; looks, and says he is, quite well. On the left arm is one dusky-colored cicatrix of vaccination, quite healed. A few small spots of acne are scattered over the upper part of the chest. The fauces are slightly congested, but there is no ulceration.

CASE 4.—H. H——, male, æt. 22.—No. 9 in Mr. Hutchinson's first series. A very fair man, with a particularly clear, white skin and bright color, appears to be in perfect health. On the left arm is one dark-colored cicatrix from vaccination quite healed. The tonsils are large and red, but not ulcerated. In the centre of the back, below the scapulæ, is a superficial patch somewhat coppery in color, desquamating slightly and fading off.

CASE 5.—W. W——, male, æt. 18, No. 10 in Mr. Hutchinson's first series. A dark-complexioned man, spare and short; looks to be in general health. On the left arm is a deep-colored vaccination scar, not raised and quite healed. A few spots of acne are scattered over the shoulders. The fauces are a little congested, but not ulcerated.

WM. S. SAVORY,
GEORGE G. GASCOYEN.

On July 25, 1871, in company with Mr. Hutchinson and the gentleman who vaccinated the cases reported in the first series, I visited a large business establishment in order to examine several of the persons who had been vaccinated from vaccinifer No. 1, already reported on.

No. 1.—J. L——, a girl, æt. 18, No. 4 in Mr. Hutchinson's first series. She showed three vaccine marks on one arm of a brownish color. On her body and arms there were a few, small, copper-colored, scaly blotches. I counted about a dozen in all. Her throat showed a deep excavated ulcer on the right tonsil, and

on the left two or three smaller and more superficial ulcers. The posterior cervical glands were enlarged, and on the left side under the jaw there was a circumscribed lymphatic gland much enlarged.

No. 2.—C. R——, a cook, æt. 24, No. 5 in Mr. Hutchinson's first series. On her arm there were two vaccination marks; these presented no remarkable appearance. On examining the neck and body there were seen a few very faint blotches. These would have been scarcely observed had they not been pointed out as the traces of what was said to have been a very evident eruption a few days before. There was nothing worthy of notice in this case.

No. 3.—C T——, a young man, æt. 20, No. 8 in Mr. Hutchinson's first series. On one arm was the cicatrix of the vaccination, only one place having taken. This was of a red color, not very dark, and felt hard when pinched from side to side. On the body and arms, and more especially on the abdomen, there was seen a general mottling or staining of the skin. The rash was slightly darker than the surrounding healthy surface, but was not raised. This was said to be the remains of a rash which was well marked a few days previously. No other symptoms.

No. 4.—W. W——, a young man, æt. 18, No. 10 in Mr. Hutchinson's first series. He had a rash similar to that seen in the preceding case, but more defined. All over the body and shoulders there were distinctly defined blotches of a brownish color. These were evidently the remains of a fading rash, which was said to have been very distinct. The remains of a nearly healed ulcer in the throat were to be seen.

No. 5.—H. H——, a young man, æt. 22, No. 9 in Mr. Hutchinson's first series. Covered with a rash resembling that seen in the preceding case, but still more marked. On passing the hand over the surface it felt somewhat raised as if disposed to be lichenous. The tonsils were much enlarged, red, and injected. This enlargement is probably of old standing.

In the last three cases the eruption might be styled erythematous, while in this case it was disposed to be also papular.

SAMUEL WILKS.

These cases were seen by members of the committee on three separate occasions, which accounts for the differences in the several reports.

When, however, the history of the patients is taken into consideration, and the symptoms presented by them at different periods of time, we can entertain but little doubt that they have been the subjects of constitutional syphilis.

SAMUEL WILKS,
WM. S. SAVORY,
GEO. G. GASCOYEN.

On September 4, 1871, I saw a female, æt. 18, No. 4 of Mr. Hutchinson's first series. She had a large and tender swelling on the left side of the neck, beneath the angle of the jaw. There was a large excavated ulcer on the right tonsil; there were a few faintly marked scaly copper-colored spots about the head of the elbow. On the right arm were three marks of vaccination of a light copper color. The patient complained of pains in her forehead. She seemed to be in good general health.

THOMAS SMITH.

I entirely agree with the above report, so far as it applies to this case, which was the only one of this group that I had an opportunity of examining.

THOMAS SMITH.

It will be observed that in the series of vaccinations reported by Mr. Hutchinson, not all those vaccination from the same children contracted syphilis. Mr. Hutchinson asks whether the practice followed by some vaccinators of allowing the vesicle to drain after its first contents have been exhausted, and using the weepings, necessarily mixed with the constituents of the blood, for vaccination, may not account for the fact that those first vaccinated in the series escapad the contagion of syphilis.

Evidence has been recorded to show that direct inoculation of blood from a syphilitic patient, may propagate primary syphilis.

In order to avoid the catastrophe of communicating syphilis by vaccination the following precautions have been recommended:

1. A clean lancet should be used.
2. In selecting lymph avoid first children, and those where family history is not well known to the physician.
3. Exercise the most scrupulous care in the performance of vaccination
4. The lymph should be taken from the vesicle not later than the eighth day.
5. The lymph only should be taken, and it should be free from the admixture of blood or other secretions.
6. The lymph should be always taken from a healthy subject.
7. Whenever the surgeon is not fully and thoroughly satisfied of the humanized virus at his command, he should use virus derived directly from the cow.

A graver question is involved than even the possibility of syphilitic infection, and one which threatens the safety of the entire community, namely the avoidance and even forcible resistance of all vaccination and the

defeat of all laws devised to protect the people from the ravages of small-pox, on account of the occurrence of such isolated cases, as those of the outbreak at Rivalta, and those reported by Mr. Hutchinson.

The object of vaccination is to produce a real and absolute disease; and no precaution should be regarded as too minute and trifling which is calculated to insure the perfect attainment of this end; the vaccine disease is not natural to man, it is planted on a soil foreign to its existence; and therefore it requires constant watchfulness and judicious cultivation to restrain all conditions or tendencies to deterioration.

If under the best possible selection, and with the utmost care in cultivation, the vaccine virus loses energy as its human transmissions become more and more numerous, it follows logically that, from time to time, new sources of primary supply should be sought for and opened.

We have recorded the essential facts in the history of the cow-pox in various countries, and the medical profession should be always on the alert to discover spontaneous cow-pox, and should ever be ready to introduce new supplies of cow-pox matter.

MODIFIED, OR LACTO-VARIOLOUS INOCULATION.

Docter Basil Thiele, conceived the idea of mixing the virus of small-pox with milk; and in 1839 thus described this process.

Small-pox matter was preserved for ten days between glasses, closed with wax; then after having diluted the matter with warm cow's milk, inoculation was practiced as with ordinary vaccine.

Dr. Thiele stated that the pustules obtained by means of this mixture are much better marked than in ordinary cases, but after about ten transmissions, they end by presenting the characteristics of true vaccine when, however, care has been taken at each transmission to mix the virus of variola with a small quantity of milk taken directly from the cow.

M. Bracuet, at Lyons, and Robert, at Marseilles, claimed to have performed similar experiments about the same time.

The theory which underlies this practice appears to be, that variola has passed from man to the cow, and that during this passage it has undergone that modification which makes of it vaccine; the changes which takes place in the virus of variola can also be produced by a drop of milk in the open air.

Dr. Descieux of Monfort l'Amanry, was attending a woman attacked with variola; three of her children were around her; two had not been vaccinated; having at the time no vaccine matter, he made a mixture of milk and variolous matter, with which he inoculated the children making four incisions in each arm. The sores at the points of insertion occurred as usual and followed the course customarily observed; but on the eighth day one of these children was taken with fever, and three days later from twenty-five to thirty elevations appeared over its body. The other child showed only the sores of insertion, besides which on the eleventh day, five or six supernumary points not far removed from the spots where the virus had been inserted made their appearance.

Notwithstanding this second eruption, M. Descieux still remained undecided; on the eighth day he again took virus from the last child and transmitted it to three others. This inoculation cleared up all his doubts; the newly inoculated being all three seized with well defined although mild attacks of variola. In one, the general eruption made its appearance on the seventh day, and in the two others on the eleventh.

A midwife inoculated five infants with lacto-variolous matter; one of those three had a complete, though rather mild attack of variola, and the

two others who were barely two months old, had confluent small-pox, and their lives were in danger.

A final proof of the small efficacy which milk has in modifying variola, was afforded by the fact that these experiments gave rise to an epidemic of small-pox, which affected six vaccinated persons.

The epidemic was not at an end, at the time when M. Descieux, wrote the preceding interesting details.

M. Lanfranchi, sanitary officer at Guitera (Canton of Licaro District of Ajaccio), and physician to the Canton, had to contend, in 1854, with an epidemic of confluent variola, and conceived the idea of testing on his son a mixture of variolous matter and cream from cow's milk. The inoculation of this variolous matter and cream, resulted in the formation of a small scab which fell off or became indolent on the third or fourth day; when on the sixteenth or seventeenth day a well pronounced inflammation manifested itself at the incision; fever was kindled, and *variolous pimples* exhibited themselves in divers places on the body, to the number of seven or eight. The fever was mild in character and the child recovered, six other children of the parish in which the fatal form of confluent variola was prevailing, were subjected to the same mode of inoculation, and like the son of M. Lanfranchi* had a *benign type of varioloid.*

If the disease produced was varioloid, it was of course contagious, and no special advance was made on the old method of *inoculation*, which we have shown, was a comparative mild and harmless operation, often attended with but slight fever and few pustules, and causing death when properly treated in a proportion of not more than one in 600 cases.†

Dr. C. H. Tebault, practiced "Modified Inoculation," or the engrafting of "equal parts of cow's milk and variolous matter taken from the pock in the vesicular stage," in October, 1864, upon some thirty Confederate soldiers in the Ocmulge Hospital, at Macon, Georgia.

Dr. Tebault states that he "engrafted one soldier after another with the modified lymph, until thirty-odd had swelled the list of my experiments. Of thirty-five persons thus successfully inoculated, there only exhibited a few additional pocks, in no case more than six in addition to the seat of puncture."

"*Additional pocks*" are not characteristic of the vaccine disease; but they are characteristic of inoculated small-pox.

By the stringent orders of Surgeon General S. P. Moore, universal vaccination had been and was practiced by the medical officers of the Confederate Army; and a military hospital subject to this rigid rule was not the most favorable position to test the contagious or non-contagious character of the disease induced by "modified inoculation."

The question was rendered still more complicated by the prevalence of small-pox in Macon, and the transferring of small-pox cases occurring amongst the Confererate troops to the small-pox encampment or *tent hospital* three miles from Vineville, under the direction of Assistant Surgeon J. Carter (at that time in the service of the Confederacy).

Dr. Tebault states that "at the encampment above mentioned, this modified inoculation was in general use, vaccination being entirely ignored. It was practiced, I believe, previous to the date of my own experiments, though unknown to me at the time. To this station all casee of variola or varioloid occurring at any of the post hospitals, were immediately sent for treatment."

*Revue Medico-Chirurgicale, No, 13, p. 543.

†Modified Inoculation by C. H. Tebault M. D. New Orleans Medical and Surgical Journal, July, 1866

Dr. Tebault, writing in 1866, expressed the hope that "Dr. Carter will find an early occasion to make known his very extended experience in the premises."

During my investigations upon hospital gangrene in the Confederate Army at the Empire Hospital, in 1864, I frequently visited the small-pox tent hospital on the outskirts of Vineville, and witnessed the devotion of Dr. Carter to the small-pox patients. I also conducted investigations upon the changes of the urine in variola and varioloid, and performed post mortem examinations.

I also corresponded with Dr. Carter on the subject of inoculation, after the war, and his testimony was to the effect, that he did not mix milk with the variolous matter, but employed the *clear lymph from the pocks before the formation of pus.*

He appeared to attribute the mildness of the resulting variola to the employment of the variolous lymph before the formation of pus.

As therefore there are facts to show that the disease excited by inoculating the mixture of milk and variolous matter is essentially varioloid and capable of producing small-pox in the unprotected, we must therefore discard *lacto-variolous*, (modified) inoculation, for the same reasons that the profession has abandoned SMALL-POX INOCULATION.

Inoculation whether performed with pure small-pox matter, or with a mixture of variolous matter with cream or milk, induces a comparatively mild, and harmless disease to the individual; but it keeps alive the contagium of small-pox, and involves the health and lives of all unprotected persons in contact.

RETRO-VACCINATION.

Retro-vaccination, or the inoculation of cows with vaccine lymph that has been passed through the human body has been performed inumerable times by various observers, with very variable success.

Ceely made various discriminative experiments, and found that whatever the source of the lymph, and whatever its age, if it were only good lymph, it succeeded equally often, and excited equally perfect and productive vesicles.

The most conflicting statements, however, have been made, as to the facility with which cows may be infected with humanized lymph. According to Heim, Hering and Hausmann, the experiment is only rarely successful, perhaps once out of ten or a dozen trials; Fiard met with but six or seven very doubtful successes in seventy experiments; Viborg and Retta were unable to succeed; on the other hand, Caqué, at Rheims, Husson and Tenier, at Paris and Versailles, Sacco, at Milan, and Hillwag, at Eutin, in the early days of vaccination, and more lately, Neumann, at Utrecht, Billing, at Stockholm (in 1832), Lentin, in Weimare in 1835), Prinz, at Dresden (in 1838), Messrs. Ceely, Chauveau and others have succeeded.

Dr. Edward C. Seaton in his valuable hand-book of *vaccination* (p. 96) states that "when active lymph, such as passes from arm to arm with the greatest facility, is passed through the cow, and at once vaccinated back, it yet retains so much of its humanization that it is not able to fail like primary cow-lymph, but will be found also to have *lost* so much of its humanization that on its return to the human subject, it takes effect less kindly; papulation is usually retarded, and though the vaccination may obtain maturity at the ordinary average period, the completion of the maturation is often postponed. The vesicles are often smaller and the disease not really so well developed as the stock from which the lymph was derived. Two, three, four, or several removes are necessary to give it the same activity as it had before it was transferred.

VARIOLATION OF THE COW; OR PRODUCTION OF VACCINE BY INOCULATION WITH THE LYMPH OF HUMAN VARIOLA.

The records of medicine establish beyond the shadow of a doubt that it is possible to produce vaccine in the cow by small-pox inoculation; but the operation is one of very considerable difficulty; for one case in which the inoculation succeeds, it will fail in at least a dozen.

The earliest efforts at the inoculation of the cow with small-pox failed; Jenner himself did not perform any inoculations of cattle with the lymph of human variola; but as early as 1801, Gasner, of Gunsbury, by inoculating eleven cows with small-pox matter produced on one of them vesicles from which he was able to inoculate four children; these children developed the ordinary phenomena of vaccination, and, with lymph from them, seventeen other children were similarly infected.

In the same year (1801) Loy demonstrated the production of the vaccine disease in the cow from horse-pox (variolae equinæ)

Dr. McMichael stated to the Royal College of Physicians in 1828, that in Egypt it had been discovered by some medical men that fine, active vaccine virus might be produced by inoculating the cow with small-pox from the human body, and that several children had been vaccinated with complete success with the lymph thus generated. (Report of the Vaccination Section of Prov. Med. and Surg. Assoc., 1839, p. 24.)

Dr. Sunderland, of Barmen, in 1830, infected cows with the contagion of variola, by enveloping them in blankets taken from the bed of a patient who had died of small-pox, and by hanging such blankets around the head of the animal, so that they might breathe the effluvia arising from them.

The result, according to the statement of Dr. Sunderland, was that in a few days the cows manifested the symptoms of cow-pox, and lymph taken from them produced genuine vaccine vesicles in the human subject. (Hufeland's Journal, January, 1831.)

Similar attempts to infect cows directly by the repetition of Sunderland's experiments, as those of Mr. Ceely, (1) in England, Mr. Macpherson, in India, and by Mr. Lamb, (2) at the veterinary school at Alfor, at Berlin, Weimar, Bugen Dresden, Kason, Utretch and Stockholm, were unsuccessful.

In 1836, Dr. Thiele, of Kasan, after similar fruitless attempts to infect the cow by inoculation of the variolous virus, succeeded in producing the genuine vaccine disease. From this Dr. Thiele raised a stock of lymph for human vaccinations, which at the time his account was published, had gone through seventy-five transmissions, and been employed in the vaccination of more than 3000 subjects, many of whom had had their security against small-pox, tested by inoculation, and by the closest exposure to the infection of that disease.

Dr. Thiele on various occasions afterwards succeeded in producing cow-pox in cows by variolous inoculation, and he attributes much of his latter success after so many early failures, to the precaution he takes in selecting the animals and in the mode of conducting the experiments.

Dr. Thiele directs that the cows should be selected from four to six years old, which have recently calved, and if possible which have white or fair teats; they should be kept at a uniform temperature (15° R.); the inoculations should be performed at the base of the udder, out of the way of licking, the udder being first shaven; and the variolous lymph should be in a clear limpid state.

(1.) Trans. Prov. Med. and Surg. Assoc., vol. 8, p. 380.
(2.) Trans. Med. and Phys. Society of Calcutta, vol. 6 and vol. 8.

Mr. Ceely, of Aylesburz, succeeded in February, 1839, in producing vaccine vesicles in two sturks, by inoculation with variolous lymph, and in thus establishing lymph-stocks which passed at once into extensive use, so that, in a few months, more than 2000 children had been vaccinated from them. In many of these subjects the protective value of the variola-vaccine lymph was tested by variolous inoculation by Mr. Ceely himself at various periods after the vaccination; no constitutional affection was produced thereby in any case and the local results resembled in every respect those recorded by Willan as having attended the test inoculations practiced in the early days of vaccinatien. The experiments were made on this occasion on three animals, and succeeded on two; but he states that he had many times failed to variolate the cow at different seasons and under varying circumstances by precisely, or pretty nearly the same modes of operating as were successful in these instances. (Trans. Prov. Med. and Surg. Assoc, vol. 8, pp. 379-402.)

Mr. Ceely draws especial attention to the fact, that the transmission of the disease, thus originated, from the cow to the human subject was a matter of some difficulty. Out of twenty punctures made from his first cow, only six vesicles were obtained, and they appeared tardily; he describes the vaccine as fine and "pearl like." Out of sixteen punctures, again made from his second cow, only seven vesicles were obtained. The areola did not appear until from the tenth to the twelfth day. In this difficulty of transmission Mr. Ceely recognises phenomena similar to those observable in vaccinating from primary or natural cow-pox. Subsequent human generations were effected more readily; but in some instances the difficulties were not completely overcome, even in the second removes. In the subsequent removes a marked experiment was observed in the development of the vesicles, and the active manifestation of the primary and secondary symptoms were not less apparent than in the use of natural lymph under corresponding circumstances.

Mr. Badcock, in Deeember, 1840, "succeded in variolating a cow at Brighton, and deriving thereform a stock of genuine vaccine lymph. (A Detail of Experiments Confirming the Power of Cow-pox, etc).

Mr. Badcock, from 1840 to 1867, has by inoculation of cows with the lymph of human variola raised stocks of vaccine lymph for use on no fewer than thirty-seven separate occasions. Every one of these thirty-seven successful experiments was the result of the direct inoculation of the animal with lymph taken from a human subject affected with variola; that no case is included in which lymph taken from a cow that had been variolated was used to inoculate other cows.

Dr. Edward C. Seaton states that the lymph thus obtained by Mr. Badcock, is now (1868) largely employed; it has been supplied to many hundreds of practitioners, and very many thousands of children have been vaccinated with it.

It is worthy of note, however, as illustrating the difficulty attendant on the production of vaccinia in the cow by variolous inoculation, that these thirty-seven successes represent but seven per cent of the experiments undertaken by Mr. Badcock; to obtain them, he had to perform between five and six hundred variolous inoculations.

There is a large amount of medical testimony to show that the lymph obtained by Mr. Badcock, is equal in activity and protective power to that of the early human generations from natural cow-pox.

In 1852, Mr. Ceely's experiment were repeated in America by Dr. Adams, of Waltham, and Dr. Putnam, of Boston, who were able in consequence to "furnish the city and neighborhood of Boston with the vaccine matter used there since that period."

Dr. Leonhard Voight,* superintendent of vaccination at Hamburg, has recently succeded in inoculating cows with human small-pox matter ; his results, however, do not possess the value which attaches to those obtained by Thiel, Ceely and Badcock, inasmuch as he performed vaccination simultanous with the variolous inoculation.

We cannot admit that the experiments at Lyons and those of M. Chauveau, show "that it is a delusion to suppose that the inoculation of cows with variola has ever produced in that animal real cow pox ; for in fact it produces in the cow real small-pox and nothing else."

The experiments have been too few to warrant this wide inference; at the same time it may be admitted that the local sores produced by the small-pox matter may have been capable of propagating small-pox when inoculated into the human being.

We cannot admit that the hundreds of practitioners who in England have been using Ceely's and Badcock's lymph, during the past forty-four years have not been vaccinating as they supposed, but actually unconsciously variolating their patients—that they have in fact been making their patients so many foci of variolous infection.

ANIMAL VACCINATION.

By the term "Animal Vaccination" is meant the employment for the vaccination of the human subject of the virus of cow-pox, as propagated upon a succession of calves or heifers, the original virus having been derived from pocks upon the cow spontaneously affected with the natural disease.

The practice of animal vaccination, as now followed in Europe and various parts of America, originated with M. Negri, in Naples, who was the first to propagate natural cow-pox by successive vaccinations upon the heifer.

Shortly after the introduction of vaccination into Italy, Troja, of Naples, conceived the idea of taking the vaccine virus from the vaccinated cow for the purpose of human vaccination, and the practice was preserved by him and his successors during many years for the benefit of the upper classes of society. On the death of Troja, Galbiati continued it, and, although in 1810 these vaccinations were prescribed, yet, in the same year, several distinguished statesmen availed themselves of this method for their own children.

Galbiati was followed by M. Negri, who has had to bear the brunt of official opposition similar to that offered to his predecessors. It is to M. Negri that the world owes the practice of animal vaccination. Troja and Galbiati had both propagated in the heifers a vaccine disease implanted upon them originally from a human source. In fact, they practiced *retro-vaccination*, the result of which was propagated through a series of animals.

At first, M. Negri followed in their steps, and after a time ceased to propagate the virus thus obtained. During the thirty-four years preceding 1868, that he has presided over the animal vaccination in Naples, he has three times obtained a new supply of virus from cases of natural cow-pox, on each occasion maintaining the supply by an uninterrupted succession of inoculations from animal to animal.

It is said that on two occasions M. Negri availed himself of natural cow-pox matter obtained in Italy, but that on a third occasion, in 1858, in which he renewed his supply, it was derived from London.

* Vaccine and variola by Dr. Leonhard Voight, superintendent of vaccination at Hamburg. North Carolina Medical Journal, October, 1882 No. 10, p, 383-412.]

So thoroughly have all the prejudices against animal vaccination been cleared away, that M. Negri vaccinated from the heifer in the course of a year from 3,000 to 4,000 persons, a number nearly equal to the annual births that take place at Naples, and for several years past, M. Bima, of the Italian Army, has used the animal vaccine alone for his regimental vaccinations and for the pupils of the military colleges.

In 1864, M. Lanoix, a young French physician, visited Naples in order to study the practice of animal vaccination as pursued there, and on his return brought back with him to Paris a calf, and in concert with M. Chambon, set up a private establishment for the propagation of the virus from calf to calf, and for the supply of animal vaccination in Paris.

In his report on vaccination in France during 1864, M. Depaul, in the name of the Académie de Médecine, gave an account of the observations made in Paris upon this subject, and in February, 1866, the French Government placed the sum of 6,000 francs at the disposal of the Academy for the purpose of experiment in the matter. A commission was appointed, the report of which was drawn up by M. Depaul, the Director of Vaccine. This report was favorable to the practice of animal vaccination. The commission, however, were much divided in opinion, and the Academy did not recommend that the practice should be adopted. At first, the virus used by the commission was that in use by MM. Lanoix and Chambon, and which they had previously obtained from Naples. But, after four transmissions of the virus had been made, a new source of virus from natural cow-pox was discovered at Baugency (Loiret), and then the use of the Neapolitan virus was abandoned, and this new and undoubted cow-pox virus alone employed.

MM. Lanoix and Chambon also adopted the use of this virus to the exclusion of that they had before employed, and having in the autumn of the same year (1866) met with another case of natural small-pox at St. Mandé, near Paris, they introduced this lymph also into their practice of animal vaccination. They saw no advantage in keeping these two lymphs distinct, and the virus they have employed since 1866 to the present time is a mixture of the two natural sources discovered at Baugency and St. Mandé. Whatever the origin of the Neapolitan virus may have been, therefore, there can be no question that the inoculations made by the commission (after the first four) and that still made in Paris by MM. Lanoix and Chambon, were transmissions of the virus of a cow-pox of spontaneous origin.

The establishment of these latter gentlemen, situated in the centre of Paris (Rue Marsillen), is a private one. They bear the entire expense of it and make a charge to practitioners and others to whom they supply virus. It is carried on like that of M. Negri, at Naples, as a private speculation.

M. Lanoix, however, has, since the summer of 1865, held an appointment from M. Hassen, the Director de l'Assistance Publique, for the weekly performance of vaccinations in the hospitals of Paris, from the calves which he inoculates week by week, and by far the larger part of the vaccinations and re-vaccinations performed in these establishments is done in this way.

From Paris the practice of animal vaccination has extended in many children.

In February 1865, it was introduced into Brussels, by Dr. Warlomont.

Animal vaccination has been inaugerated in Prussia by M. Prosoroff. The practice was introduced into Berlin, by M. Pissin, in June, 1865, and is still carried on there as a private speculation. It is also practiced in the same way in Vienna.

The practice of animal vaccination has been established in most of the capitols of Europe.

Animal vaccination was inaugurated in the United States of America, in September, 1870, by Dr. Henry Austin Martin, M. D., of Boston, Massachusetts. (Boston Medical and Surgical Journal, October, 20, 1870).

Dr. Martin received virus by letter from Professor Depaul, of Paris, and also directly through his agent, who returned from Paris, to Boston, on the twenty-third of September, 1870. The virus brought to America, by Dr. Martin was, from the 258th, 259th, and 260th, animal of Depaul's series, beginning with the heifer at Beaugency. During the Franco-Prussian War and the siege of Paris, animal vaccination ceased. In November, 1873, Professor Depaul assures Dr. H. A. Martin, of Boston, that the virus carried from Paris by his agent in 1870, was the last to have left the city, and that during the siege the "*stock*" was lost. The animal virus employed in Paris, since the Francó-Prussian War, is from other stock discovered since that of Beaugency. (Report on Animal Vaccination by Henry Austin Martin, M. D. Reprint from the Transactions of the Amerioan Medical Association, Boston, 1877, p. 17.)

There are two principal grounds on which the practice of vaccination from the heifer has been advocated.

1. The opinion is widely though not universally held, that the results of vaccination from arm to arm are not such as they used to be during the earlier years of the practice of vaccination; in fact, that by repeated human transmissions the virus has become weakened, and that the pocks produced by the introduction of lymph which has passed through a large number of human beings are not so fine or so perfect as those which result from the use of lymph derived recently from the cow.

2. The opinion that certain human diseases may be propagated together with the vaccine when vaccinations are performed from arm to arm.

Galbiati adduced this belief as his reason for practicing vaccination from the cow; arguing that on vaccinating the cow from the human subject, the vaccine disease alone would be communicated to her, the other morbid germs which might be introduced with it remaining without effect. He considered apparently that in practicing retro-vaccination he as it were filtered human vaccine from all human contamination.

The publication within the last few years of alleged outbreaks of syphilis after and, as is stated, as the result of vaccination from diseased subjects, has greatly assisted to popularize the practice of animal vaccination. They not only made a deep impression upon the public mind, but determined the adoption of the practice by some distinguished physicians.

One of the highest living authorities on vaccination, M. Depaul, in a report to the Acadêmie de Mêdecine, which attracted much attention and gave rise to much angry discussion, expressed his views upon this subject so decidedly that nothing was logically left him but to recommend the entire discontinuance of arm to arm vaccination and the use of animal vaccination as the only safe method of propagating the disease.

Dr. Edward C. Seaton,* in his elaborate report on "so called *animal vaccination, in France, Belgium and Holland*, not only embodies the results of the careful investigation of Dr. Edward Ballard, upon the history and practice of animal vaccination in various parts of Europe, but also presents his own extended and elaborate personal observat ons upon European animal vaccine establishments.

* Twelfth Report of the Medical Officer of the Privy Council, London, 1870 p. 171-191.

Dr. Seaton thus states his general conclusions.

"So far, then, as evidence at present goes, it appears quite clear.

(1). That the present degree of success attending the practice of animal vaccination is, in comparison with the success attending on vaccination from arm to arm, very low, and such as to constitute a most serious drawback to its use, supposing that other reasons were deemed sufficiently strong to render the introduction as an alternative proceeding desirable.

(2). That much training and experience are indispensable to the attainment of even that degree of success which at present attends it.

If practicted and most scrupulously careful vaccinatiors, anxiously endeavoring to make the experiment successful and neglecting no known precaution for the purpose, find after two years experience that in vaccinating direct from the heifer to the arm, they are obliged in one eighth of these cases to vaccinate a second time before they can produce any effect, and that in the end very nearly one fourth of the children who are infected in this way are sent out with that imperfect degree of protection against small-pox which is afforded by only one or two vaccine vesicles, it must I think be obvious that by the adoption of such a practice we should be greatly weakening our defense against small-pox.

The chance to each individual of a full protection would be very largely diminished, and the danger to the community of spreading small-pox greatly increased by the number of half protected persons thrown upon it. We should be going back in fact to the state of things which from other causes, existed a few years ago, and from which of late years so much has been done to rescue us.

The large quantity of lymph which would be available at short notice in case of epidemic outbreaks of small-pox, and of want of sufficient supply of ordinary lymph, has been put forward as one of the great advantages which would attend the use of animal vaccination. Under the arrangement, however, now in force, in England, deficiency of lymph supply in any such emergency is a contingency which need not be thought of. And if there be a time when it is important that the lymph employed should be such as can be depended on for success, that it should *strike home without failing*, it is surely when persons brought for vaccination are in immediate danger of contracting small-pox."

My experience with the so called "*bovine matter*," used in New Orleans during the past four years, corresponds with the preceding statement of Dr. Seaton.

The vaccine matter on points and quills and crusts furnished by the various vaccine farms of the United States, has not given universal satisfaction with the profession on account of the vast number of failures which have attended its use.

These failures appear to have been referable to several causes, amongst which we may mention.

1. The abstraction of too much lymph from each vesicle in the cow. In other words the effort to supply a large demand and secure large pecuniary profits with a limited supply of cow-pox matter.

A careful examination of many of the points, revealed the fact that the "*dried lymph*" was largely composed of the constituents of the blood—many colored and colorless blood corpuscles—albumen and fibrin.

This result was in many cases due to the use of the bloody serum flowing from the injured pocks.

2. Carelessness in the selection of the animals vaccinated, and the failure to reject all inperfect pocks.

3. Changes in the infective powers of the cow-pox matter, consequent upon tune, heat and moisture.

In the emergency of the small-pox of 1882 and 1883 in New Orleans, the sanitary officers of the Board of Health, of the State of Louisiana, have not been able to meet the issue by the employment of bovine matter alone.

Out of over 12,000 (twelve thousand) gratuitous vaccinations performed by the president and sanitary officers of the Board of Health, of the State of Louisiana, during the past four years, no case of vaccinal syphilis, or of serious accident has been reported. The vast proportion of these vaccinations were perfor ned with humanized virus; and in all cases care was taken to select the matter from healthy subjects.

GENERAL CONCLUSIONS.

From the vast mass of matter relating to vaccination, including the valuable works of Jenner, Pearson, and Woodville, recorded in the preceding pages, we may draw the following practical conclusions:

1. The practice of vaccination carefully performed in accordance with the rules and regulations laid down by Edward Jenner, is as complete a protection from small-pox at the present time as in the early part of the nineteenth century. Millions of human beings have been preserved from the most loathsome and destructive of modern pestelinces during the past eighty-four years by vaccination.

2. Without vaccination, the application of steam and navigation and land travel would have, during the past fifty years, scattered the seeds of small-pox in every part of the habitable globe.

Fortunately for mankind, the great discovery of Jenner was announced before the application of steam, and the revolution of commercial and military operations.

3. The practice of vaccination has not impaired the strength and vigor of the human race, but on the contrary has added vastly to the sum of human life, happiness and health.

4. Variolous inoculation which preceded vaccination, induced a comparatively mild disease, and served as a protection against subsequent casual contagion; but it multiplied the foci of contagion, kept perpetually alive the contagion of small-pox, and increased the fatal ravages of this disease amongst mankind.

5. As a general rule, vaccination in itself is a harmless operation; and whilst lessening the ravages of small-pox it has not had the effect of promoting the occurrence of other fatal maladies.

6. Whilst the protection afforded by vaccination against small-pox is neither unconstitutional nor unlimited, nevertheless many of the conditions upon which it depends are under the control of mankind For the majority of persons vaccinated in infancy and not unusually exposed to the contagion of variola, vaccination serves as a life-long protection against attacks of this disease. Experience however demonstrates that vaccination in infancy is not an absolute protection to *all* persons, against a future attack of small-pox, and in a few persons, small-pox has happened within a very short period of time after vaccination. Neither is small-pox an absolute protection to all persons against a recurrence of the disease, still the recurrence of small-pox is a much more rare event than small-pox after vaccination. Post-vaccinal small-pox is most commonly met with in epidemic seasons, or under circumstances of unusual or prolonged exposure to contagion.

7. When vaccination fails to impart absolute protection against small-pox contagion, it nevertheless modifies, in the majority of instances, the course of the disease and renders it less fatal. The protection against the contagion of small-pox commences from the time that the areola is formed around the vaccine vesicle.

8. A large number of persons, vaccinated in infancy, reacquire, in the progress of years, the power of developing the virus of small-pox in their systems; the breaking of the protective power of infant vaccination is progressive, and occurs most rapidly during the period of most active bodily growth from infancy to puberty; therefore, revaccination should be performed about the age of fifteen, or at any time when small-pox becomes prevalent.

9. The production of a perfect or imperfect vaccine disease, and the amount of protection imparted in vaccination, depends, to a considerable extent, upon the adoption or neglect of certain precautions, having ref-

erence to the source from which the lymph is derived, to the subject vaccinated, and circumstances and mode in which the operation is performed. The opinion is held by many that the vaccine disease is a less perfect and harmless protection against small-pox when produced by the inoculation of virus which has already undergone a large number of transmissions. Hence, it has been concluded that post-vaccinal small-pox would occur more rarely if lymph directly from the cow, or only a few removes, is employed.

Without doubt, the profession should, at all times, seek to discover cases of cow-pox, and recurrence to the original source of vaccine lymph should be had whenever practicable.

10. It is the duty of municipal, state and general governments to regulate and foster a correct system of vaccination, and to institute and sustain the necessary establishments for the supply to all citizens, regardless of condition or race, supplies of pure vaccine matter, derived from healthy huhuman beings, or from animals suffering with the natural cow-pox, or from a system of inoculation of cow-pox from heifer to heifer, or repeated and continuous successions: such general, municipal and state regulations should embrace the revaccination of all persons at the age of sixteen years, and such persons so vaccinated may be regarded as permanently protected.

11. Vaccination should be performed by experienced physicians, and with every attention and precaution as to the cleanliness of the operator and his instruments, and the freshness and purity of the vaccine matter.

12. The experience of the Confederate medical officers during the recent American civil war, 1861-1865, was most extensive and valuable, and tended to establish the necessity of the greatest care in the selection and mode of propagation of the vaccine disease.

The Confederate struggle of 1861-1865 opened a new field in the history of vaccination, and the experience thus obtained led to greater care in the performance of the operation; but the results of this war in liberating the African slaves of the Southern States, necessarily promoted the spread of small-pox amongst an ignorant and comparatively helpless class suddenly elevated to the rights, responsibilities and license of almost absolute freedom.

When the colored people of the South were under the direction and control of their intelligent white masters, small-pox was almost unknown. It is apparent from the results of the prevalence of small-pox since the war, amongst the colored people, that the municipal police and state, governments should take immediate steps to adopt all the necessary statutes, rules and regulations for the protection of the colored people and all other citizens, who neglect vaccination, from the ravages of small-pox.

13. When properly conducted, vaccination is never the medium of propagating small-pox; nor is there any reason to believe that scrofula or tuberculosis has been transmitted by this process. At the same time virus should not be used from unhealty individuals.

14. In children hereditarily infected with syphilis, vaccination hastens the manifestation of the already *existent*, but latent, constitutional taint; and many cases of so-called post-vaccinal syphilis are traceable to the excitation of the latent disease into such active manifestations as will render the vaccine matter capable of transmitting syphilis.

When vaccination excites symptoms of constitutional syphilis, in one already infected with the poison of this disease, either by inheritance or preceding contagion—there is no chancre formed at the place of the insertion of the vaccine virus. But when syphilis is communicated by the operation of vaccination, a chancre forms at the point where the vaccine

virus was introduced. This is a consideration of importance in tracing vaccine syphilis to its origin in any given series of cases.

15. The numerous cases recorded demonstrate that constitutional syphilis may be transmitted by contagion, by the abnormal secretions, by the blood and by the vaccine lymph.

The vaccine virus and the syphilitic virus may both be inoculated at the same spot and by the same puncture of the vaccine lancet, and in such instance both viruses may take effect, the vaccine vesicle running naturaly through its several stages, and being succeeded by a chancre on the tall of the crusts.

In the case of a vaccinifer constitutionally infected with syphilis, the danger of imparting syphilis with the vaccine is greatest when some of the blood of the vaccinifer has been accidentally mingled with the lymph obtained in puncturing the vesicle. At the same time in vaccinating, syphilis is not necessarily imparted to the person vaccinated.

16. Whilst the danger of syphilitic inoculation exists, when vaccination is carelessly performed; the practical bearing of this fact, however, has been greatly exaggerated; for in the hands of the most experienced physicians and surgeons in Europe and America, it is a danger practically so insignificant as not to detract materially from the value of arm to arm vaccination as a popuiar practice of general applicability.

It is small-pox and not syphilis which threatens our people with destruction, and which is perpetually knocking at their gates. In the Mississippi Valley especially with its teeming millions of rapidly increasing colored people—the danger from syphilitic inoculation under a properly conducted system of vaccination is almost inappreciable, whilst the danger of small-pox contagion is perpetual.

Good physicians and wise legislators should guard the public welfare from the disastrous and murderous effects of the silly reasoning of illogical detractors, the exaggerated fears of the timid, or the subtle insinuations of selfish quackery.

17. Even if the danger of syphilitic contamination by vaccination was greater than it really is, the adoption of the following precautions on the part of the vaccinator, the inoculation of syphilis in vaccination would be almost an impossible event.

(*a*). Lymph for vaccination should, as a rule, not be taken from an adult person. The chances are greater of meeting with a syphilitic vaccinifer in adults than in children.

As a rule, lymph should not be taken from an infant under three months of age, since, if any syphilitic taint exists, it will, most probably, have declared itself during this period.

(*b*). Before taking lymph, a careful examination should be made of the surface of the body of the vaccinifer, of the mouth, genitals and anus, and every infant should be rejected which is manifestly out of health or presents an eruptive or morbid appearance anywhere.

Inquiry should be made into the health of the parents and nurse and the least suspicion of syphilis in either or in the child itself should lead to the rejection of the vaccinifer.

(*c.*) The hands and person and the lancet of the vaccinator should be scrupulously clean; the lancet should be strictly used for vaccination alone, and should never be employed for opening abscesses or other surgical operations; and the lancet should be cleansed and wiped perfectly clean after each vaccination. The use of an unwiped lancet, with the blood of the vaccinated child or person upon it, is not merely careless and un-

cleanly, but if syphilis exists in any one of the vaccinated, it may be transmitted through the blood on the point of the lancet.

(d). In taking lymph, great caution should be observed in opening the vesicle, so as not to draw any blood; should blood be accidently drawn, the vesicle should be abandoned, the lancet cleaned, and a new vesicle opened. It is best to abstain from vaccinating more children from one vesicle than can be conveniently done with the lymph supplied from the first punctures made into the surface. Lymph should not be taken from a vesicle after the areola is established, or from one irritated or damaged. Parents and nurses should be warned against moistening the punctured spots or vesicles, when they arise with saliva, and also against applying old linen to the spots unless previously well washed.

(e). No child should be vaccinated whose parents or nurse are known at the time to be the subject of any primary or secondary manifestations of syphilitic disease, unless removed temporarily from the influence of contagion.

The vaccinator should, at all times and under all circumstances, retain a due sense of the responsibility which attaches to the act of vaccination, as well as to all others of a professional character.

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